

STAT/ML/5000/ 5000S Service Manual Overview and Table of Contents

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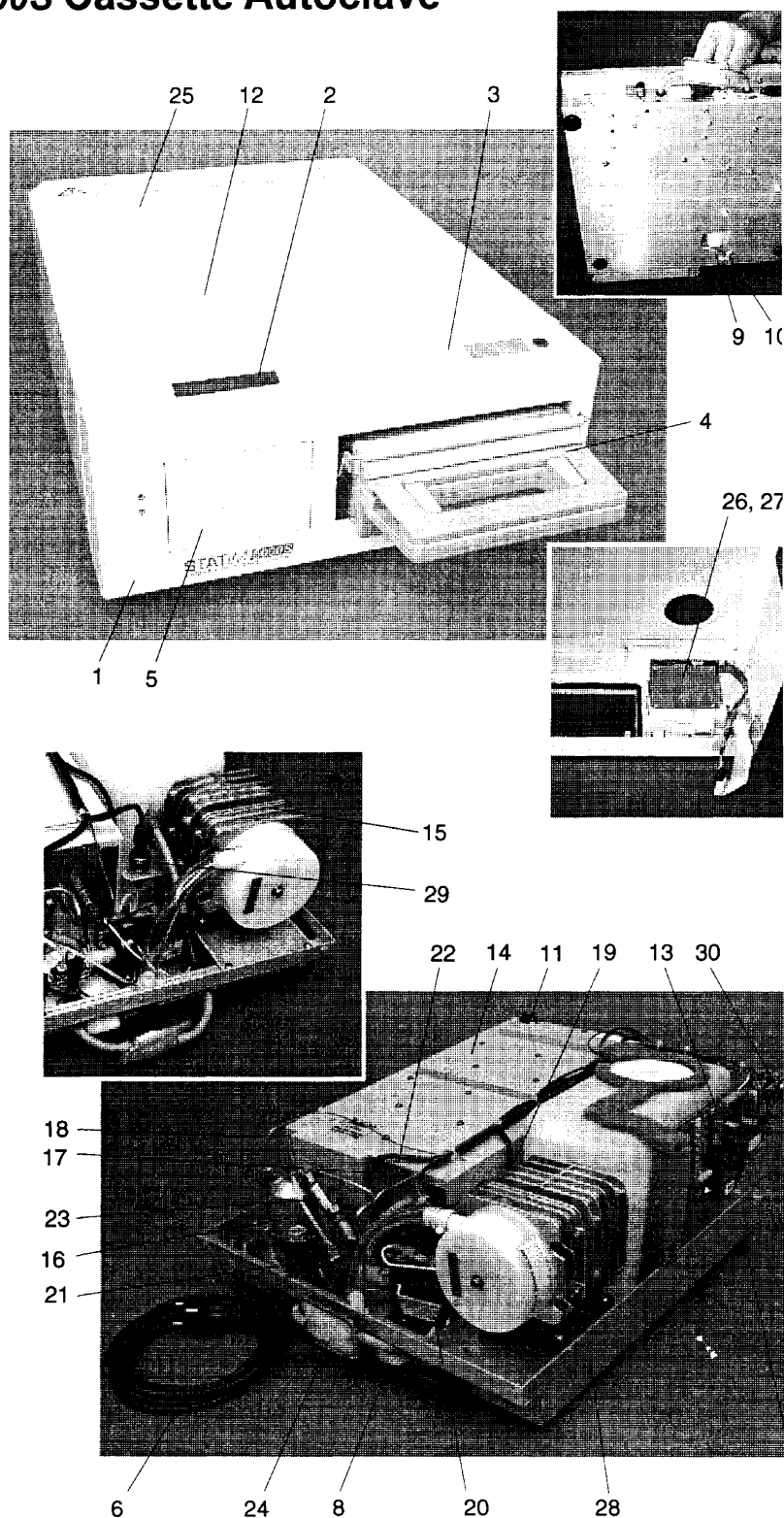
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STATIM L / 5000/ 5000S Cassette Autoclave

1. fascia
2. LCD (Liquid Crystal Display)
3. keypad
4. cassette
5. printer (optional)
6. power cord
7. leveller feet
8. air filter
9. drain tube and stopper
10. drain tube clip

11. bubble level
12. reservoir cap
13. controller board
14. armature
15. compressor
16. steam generator assembly
17. microswitch assembly
18. steam generator thermocouple
19. water quality sensor assembly
20. pump assembly

21. exhaust solenoid valve assembly
22. probe bracket assembly
23. check valve
24. biological filter (may or may not be present)
25. cover
26. protective shield (if printer option present)
27. Printer Interface Board (if printer option present) (obscured by protective shield)
28. chassis
29. transducer (STATIM 5000S model only)
30. Pressure Interface Board (STATIM 5000S model only)



About the Service Guide

This guide provides instructions for servicing STAT/ML and STAT/ML 5000 Cassette Autoclaves, including the STAT/ML 5000S. These units are very similar. Every attempt has been made to identify any differences between units and provide accurate instructions.

SERVICING MUST BE CONDUCTED BY CERTIFIED PERSONNEL ONLY. ALL LOCAL, REGIONAL, STATE AND NATIONAL REGULATIONS REGARDING THE SERVICING OF THIS CLASS OF DEVICE AND SAFETY REQUIREMENTS MUST BE OBSERVED.



Do not permit any person other than certified personnel to supply parts for, service or maintain a STAT/ML / 5000/ 5000S. SciCan shall not be liable for incidental, special or consequential damages caused by any maintenance or services performed on the STAT/ML / 5000/ 5000S by a third party or for the use of equipment or parts manufactured by a third party, including lost profits, any commercial loss, economic loss, or loss arising from personal injury.

Depending upon your jurisdiction, you may be required to report medical device failures to the relevant health care authority. You should confirm the specific medical device requirements with this authority. Information typically required includes, but is not limited to, make, model and serial number, type of failure, date, device operator name, any details of personal injury and/or property damage, and the name of the person reporting the event.

Further, you may be required to report the above information to the device manufacturer. In the case of SciCan products, whether required or not, it is vital for SciCan to learn of any problem in the field. The information described above will help SciCan solve the problem quickly and, through continuous improvement, ensure that the problem cannot occur in new units.

Throughout the manual, symbols are placed in the margin to indicate:



a potential hazard to the operator, technician or end beneficiary.



a situation or circumstance which could lead to an electrical or mechanical failure.



important information.

Should difficulties arise while servicing a unit contact your regional service/sales representative at the address provided or contact the SciCan Service Department directly.

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3.0	99.04.14	Chapter revisions done	99-0059

Trouble-shooting, Cycle Faults

Cycle Fault Number	Description of Fault	Suggested steps for Correction of fault
Cycle Fault #1	The cassette temperature failed to reach 95°C within a time-out period.	The most probable cause is a blown thermal fuse. This fault may also be caused by a large cassette leak in conjunction with a large load or a faulty steam generator triac. If the triac has failed, the thermal fuse may have also failed.
Cycle Fault #2	The cassette temperature failed to increase from 95°C to 100°C within a time-out period.	Most probable causes are a faulty cassette seal, a damaged cassette, or miscalibration. On occasion, a low pressure weather cell in higher altitude sites will alter the boiling temperature and trigger this fault. Verify Vref to be $2.520V \pm 0.001V$.
Cycle Fault #3	The cassette has failed to pressurize and achieve a temperature of 110°C within a time-out period.	This may be caused by a faulty cassette seal, a damaged cassette, or a failed or faulty solenoid valve. Verify Vref to be $2.520V \pm 0.001V$.
Cycle Fault #4	The cassette has failed achieve sterilization conditions within 15 minutes of the chamber first reaching 102°C	Several conditions may cause this: a damaged or worn cassette seal, a faulty valve, improperly installed copper tubing, cassette thermocouple misalignment or damage, a faulty steam generator pressure relief valve or a faulty check valve on the compressor.
Cycle Fault #5	The software causes the pump to activate at predetermined times. If a request to pump water occurs outside of the predetermined time Cycle Fault #5 occurs.	This may be caused by a leaky cassette, a kink in the steam generator inlet tube, a leaking solenoid outlet valve, a weak pump and a very large load in the cassette.

Cycle Fault #6	The software has detected a steam generator temperature 5°C greater than the chamber, within 7.2 seconds after a purge during the sterilizing phase of a cycle.	The most probable causes are an obstruction caused by seal misalignment or foreign material in the seal channel, a need for thermocouple calibration, or an old or fouled steam generator.
Cycle Fault #7	The cassette temperature has dropped 4°C below setpoint.	This may be caused by a faulty valve or any of a variety of leaks.
Cycle Fault #8	The software has detected a steam generator temperature 5°C less than the chamber, within 7.2 seconds after a purge during the sterilizing phase of a cycle.	The most probable causes are a bad or worn seal in the cassette, a need for thermocouple calibration or replacement, a bad steam generator or a high output pump.
Cycle Fault #9	N/A	
Cycle Fault #10	The cassette temperature has failed to drop to 115°C during the Unwrapped or Wrapped Cycle OR the temperature has failed to drop to 110°C during the Rubber and Plastics Cycle in the purge conditioning stage.	This may be caused by kinked or tightly coiled exhaust tube, or a faulty solenoid valve.
Cycle Fault #11	The cassette temperature has failed to drop to 102°C within 60 seconds of the end of a cycle during venting.	Probable causes are a blocked duct in the cassette, a pinched exhaust tube leading to the waste bottle, or a faulty solenoid valve.
Cycle Fault #12	This indicates a problem with the temperature measuring system.	Possible causes are a faulty PCB, a disconnected thermocouple lead, a broken thermocouple lead or a temperature abnormally out of range.
Cycle Fault #13	N/A	

Cycle Fault #14	The steam generator temperature is above 171°C during the sterilization phase of a cycle.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump or steam generator triac, faulty seal installation or failed solenoid valve.
Cycle Fault #15	The cassette temperature is 3°C or more above setpoint during the Sterilization phase of a cycle.	Probable cause are a blocked duct in the cassette, a pinched exhaust tube leading to the waste bottle, or a faulty solenoid valve.
Cycle Fault #16	The steam generator temperature went above 171°C during the heat up phase of a cycle.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac, faulty seal installation or failed solenoid valve.
Cycle Fault #17-18	N/A	
Cycle Fault #19	The steam generator calibration is invalid. A new calibration is required.	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate the thermocouples
Cycle Fault #20	The pump has failed to pump water into the steam generator during a pre-vent pump time-out. The steam generator temperature was greater than 140°C for 3.6 seconds after the pump was activated to pump water to cool the steam generator.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac or steam generator triac, faulty seal installation or failed solenoid valve.
Cycle Fault #21-24	N/A	
Cycle Fault #25	The software has failed to detect a need to pump water in 90 seconds.	The most probable cause is a blown thermal fuse. If the triac has failed, the thermal fuse may have also failed.

Cycle Fault #26	The sterilization phase has failed to start within 3 minutes of the cassette reaching the sterilization temperature.	This may be caused by improper calibration, a faulty cassette seal, a damaged cassette, fouled steam generator or a failed or faulty solenoid valve. Verify Vref to be $2.520V \pm 0.001V$
Cycle Fault #27	The internal temperature of the steam generator has exceeded 150°C for 25 seconds.	Several conditions may cause this: a fouled steam generator, a failed water sensor or a weak pump.

Printer Fault**Description of Fault****Suggested steps for Correction of fault**

Message:PRINTER
FAULT(if optional printer is
installed)

Printer is not printing

This is caused by either a paper jam or
a defective printer controller board.

No message displayed

The printer does not work

Make sure that all printer cables are connected. Check connections at the Controller Board and the Printer Controller Board. The cable is correctly connected if the time and date are shown on the LCD.

Make sure that the printer is turned ON.

Ensure that the paper is loaded properly. Check that the paper leaves the paper roll from the top of the roll. This means that the treated surface of the thermal paper will be in contact with the thermal print head.

Other possibilities are a defective printer mechanism or a defective Printer Control Board.

Trouble-shooting, Error Messages S-Class

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
1	The cassette temperature failed to reach 102°C within a time-out period.	A large load with cold unit. Operation at high-altitude. Steam is not getting to cassette.
3	The cassette temperature failed to reach 110°C (equivalent pressure) within a time-out period.	Unable to pressurize cassette (leak, valve failure, or no longer generating steam). Pressure measurement failure.
4	The cassette pressure failed to reach the sterilization pressure within a time-out period.	Unable to pressurize cassette (steam leak, valve failure, or no longer generating steam). Pressure measurement failure.
6	The steam generator temperature exceeds cassette temperature by 5°C or more during sterilization.	Temperature measurement failure. Fouled steam generator. Blocked exhaust, failed valve.
8	The steam generator temperature is lower than the cassette temperature by 5°C or more during sterilization.	Temperature measurement failure. Blocked exhaust, failed valve. Water pump delivery rate too high.
10	The cassette temperature failed to drop to a floor temperature during a pre-sterilization purge within a time-out period.	Unable to depressurize cassette (blocked exhaust tubing or failed solenoid valve.) Temperature measurement failure.
11	The cassette temperature/pressure failed to drop to a floor condition at the end of sterilization within a time-out period.	Unable to depressurize cassette (blocked exhaust, failed solenoid valve). Temperature measurement failure.
12	A thermocouple amplifier is driving the alarm signal.	Thermocouple broken, disconnected, or misconnected. Controller board or micro controller defective.
15	The chamber temperature rose above a ceiling temperature.	Unable to depressurize cassette (blocked exhaust, failed solenoid valve). Gross pressure and/or temperature sensor miscalibration. Pressure measurement failure.

Trouble-shooting, Error Messages S-Class

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
16	The steam generator temperature rose above a ceiling temperature of 171°C.	Pressure and/or temperature sensor miscalibration. Poor air removal during conditioning (exhaust blockage). Not able to generate steam or a leak in the system.
19	The steam generator thermocouple or pressure sensor calibration values are invalid.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve).
20	The pump failed to cool the steam generator during a purge or while venting within a time-out period.	Unable to deliver water to steam generator. Steam generator will not turn off.
25	The steam generator failed to heat to 120°C within 90 seconds of the start of a cycle.	Unable to power steam generator (blown thermal fuse, Controller Board failure). cool steam generator filled with water at start of cycle.
27	The pump failed to cool the steam generator during a "panic pump" condition at a time in the cycle other than purging or venting.	Unable to deliver water to steam generator. Bad/contaminated steam generator. High line voltage coupled with weak pump.
28	The cassette pressure rose above a ceiling.	Pressure measurement failure. Gross pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve, etc.)
29	The pump failed to cool the steam generator to the target temperature during the first pump of the cycle.	Pump not primed or failed. Temperature sensor miscalibration. Unable to energize the pump (hardware failure)
30	The cassette temperature failed to reach the sterilization temperature within 15 seconds of the theoretical cassette temperature calculated from the measured cassette pressure reaching the sterilization temperature.	Poor air removal during conditioning (exhaust blockage) Pressure and/or temperature sensor miscalibration.
50	For the Rubber and Plastics cycle, the chamber temperature dropped below the sterilization	Pressure and/or temperature sensor miscalibration. Poor air

Trouble-shooting, Error Messages Class

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
51	For the Rubber and Plastics cycle, the chamber temperature rose more than 4 C° above the sterilization temperature, allowing for measurement error (i.e. Tchm > 125°C).	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve).
52	For the Rubber and Plastics cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2 C° below the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration.
53	For the Rubber and Plastics cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2 C° above the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve). Poor air removal (partial exhaust blockage).
54	For the Rubber and Plastics cycle, the theoretical cassette temperature calculated from the measured cassette pressure was below the sterilization temperature, allowing for measurement error (i.e. Pchm < 199 kPa).	Pressure and/or temperature sensor miscalibration. Unable to generate steam, or there is a leak in the system.
55	For the Rubber and Plastics cycle, the theoretical cassette temperature calculated from the measured cassette pressure was more than 4°C above the sterilization temperature, allowing for measurement error (i.e. Pchm > 238 kPa).	Pressure sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve).
60	For a cycle at 134°C, the chamber temperature dropped below the sterilization temperature, allowing for measurement error (i.e. Tchm < 133°C)	Pressure and/or temperature sensor miscalibration. Poor air removal (partial exhaust blockage). Unable to generate steam, or there is a leak in the system.

Trouble-shooting, Error Messages Class

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
61	For a cycle at 134°C, the chamber temperature rose more than 4C° above the sterilization temperature, allowing for measurement error (i.e. Tchm > 139°C).	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve).
62	For a cycle at 134°C, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2 C° below the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration.
63	For a cycle at 134°C, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2 C° above the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve). Poor air removal 9partial exhaust blockage).
64	For a cycle at 134°C, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2 C° above the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to generate steam, or there is a leak in the system.
65	For a cycle at 134°C, the theoretical cassette temperature calculated from the measured cassette pressure was more than 4 C° above the sterilization temperature, allowing for measurement error (i.e. Pchm > 347 kPa).	Pressure sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve).
70	The time maintained by the internal timer of the processor didn't match the time maintained by the external real-time clock.	Transient electromagnetic disturbance (problem won't repeat). Damaged microprocessor or crystal (STATIM Controller Board). Damaged real-time clock or crystal (pressure sensor interface board).

Trouble-shooting, Error Messages Class

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
71	Pressure reading is outside the possible range.	Misconnected, disconnected or damaged pressure sensor. Disconnected or damaged Pressure Sensor Interface Board.
72	The pressure sensor calibration values are invalid	Transient caused corruption of EEPROM contents. Run 'blr-chm' calibration cycle, then run 'chm' calibration cycle and adjust pressure offset.
73	The chamber calibration offset is not in the expected range. This value must be between C0 and 3F.	Damaged A/D converter or defective component in A/D circuit.
80	The boiler calibration offset routine is executing at the wrong time. This routine should only run when in Boiler calibration mode.	This may occur if the microprocessor operates erratically, due to electrical noise.
81	The state buffer pointer (print data storage buffer) is invalid.	Corruption of pointer is usually due to electrical noise.
82	The calibration buffer pointer (blr-chm data storage buffer) is invalid.	Corruption of pointer is usually due to electrical noise.
83	The EEPROM SIGNATURE string is corrupted. This 16 byte string is located at 0-\$0F in the EEPROM. It should not change unless the EEPROM gets corrupted.	The EEPROM can be corrupted if electrical noise corrupts pointers and counters in RAM, or causes other erratic operation of the microprocessor.
84	The boiler chamber value just calculated is not in the range 8C to FF.	Bad or miscalibrated temperature measurement circuitry. Thermocouple defective or out of tolerance. The boiler is old or not conditioned properly. Calibration routine is running at the wrong time due to noise.
85	Unexpected Serial Interrupt.	Interference (electrical noise)
86	Unexpected SPI Interrupt.	Interference (electrical noise)
87	Unexpected IRQ Interrupt.	Interference (electrical noise)
88	The buffer pointers and sample counter are initial	This occurs if the boiler calibration routine executes when it was

Trouble-shooting, Error Messages Class

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STATIM Autoclave Service

Cycle Fault Number	Description of Error Message	Probable Cause of Error Message
89	The software state machine has detected incorrect input parameters.	Usually caused by noise and ESD.
99	The microprocessor's internal watchdog timer has tripped.	Incorrect operation of the software, usually noise or ESD related.

STATIM S-Class Cycle Fault Guide

96-104751 Rev

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Diagnosing Hardware Faults

Diagnosing Triac and Load Faults

Mains Device Switching: Theory of Operation

The STATIM L/5000/5000S Cassette Autoclave has four devices driven from mains:

- ❖ compressor
- ❖ steam generator
- ❖ exhaust valve
- ❖ water pump

These devices are switched by triacs operating under control of the STATIM L/5000/5000S software. The following is a description of the device switching circuit.

The control program operating in the 68HC705Cx microcontroller accesses the devices through the lower four bits of port A. This port is multiplexed with the display and printer so an auxiliary latch (U12 - 74HC273) is used to store the device states. This latch is clocked under software control when the program updates the device states. The outputs of the auxiliary latch associated with the switched devices are inverted and buffered by an open-drain hex inverter (U7 - 74HC05). The inverter outputs connect to the cathode of the LED inside the optoisolated triac drivers (U1 - U4) through current limiting resistors (R10 - R13).

To switch a device ON, software writes a logic 1 to the appropriate bit of Port A and toggles port C - bit 7 to load into the auxiliary latch. This causes the corresponding output of the inverter to begin sinking current, turning the internal LED of the optoisolator ON and consequently the triac and the desired load.

The SciCan control box device switches are connected in parallel with the outputs of the open-drain inverter. These switches can override the operation of software and force devices ON by forcing the optoisolators ON. The control box cannot prevent software from turning a device ON.

Four diagnostic LEDs (CR5, CR6, CR7, CR10) are located on the STATIM L/5000/5000S Controller Board. These LEDs illuminate when their corresponding device is switched ON either by software or the control box. Three of the LEDs, CR6 (compressor), CR7 (exhaust valve) and CR10 (water pump) are driven in parallel with the internal LEDs of the optoisolators. They indicate that the input to the optoisolator is being driven but do not reflect the state of the triac or optoisolator. The fourth LED, CR5 (steam generator) is driven directly by the triac in parallel with the steam generator. This LED only illuminates if both the optoisolator and the triac are functioning properly.

Each triac and optoisolator output is protected against line transients by a transient voltage suppressor (V1, V2, V3, V5). When exposed to a severe overvoltage transient these devices will usually fail shorted, turning the associated device on permanently.

Mains Device Load Characteristics

Each of the four devices running from the mains has characteristics that are important to diagnose faults associated with their operation.

Steam Generator - resistive load.

Water Pump - 1/2 wave rectified with internal diode.

Exhaust Valve - full wave rectified with internal diode bridge.

Compressor - 1/2 wave rectified with internal diode.

Measured Voltages at Terminal Block

In a correctly operating system, the following voltages should be observed at the mains terminal block of the STAT/M Controller Board:

Load	Terminal Pair	Intended Device State	Measured A.C. Voltage (non true RMS meter)	Measured D.C. Voltage
Compressor	J1-9 / J1-10	ON	mains	0
		OFF	near mains	above mains
	J1-10 / J1-1	ON	near 0	0
		OFF	near 0	above mains
Exhaust Valve	J1-7 / J1-8	ON	near mains	0
		OFF	near 0	0
	J1-8 / J1-1	ON	near 0	0
		OFF	near mains	0
Water Pump	J1-5 / J1-6	ON	mains	0
		OFF	near mains	above mains
	J1-6 / J1-1	ON	near 0	0
		OFF	near 0	above mains
Steam Generator	J1-3 / J1-4	ON	mains	0
		OFF	near 0	0
	J1-4 / J1-1	ON	near 0	0
		OFF	mains	0

Diagnosing Water Quality Sensor Problems

The water quality sensor detects whether or not there is sufficient water in the reservoir, monitors the conductivity of the water in the reservoir and prevents a cycle from starting if the water measured is unsuitable. The allowed value of dissolved solids is 5 ppm or less, or a conductivity of less than 10 $\mu\text{S}/\text{cm}$.

The water quality sensor can fail in one of four ways:

1. The sensor always indicates an empty reservoir.
2. The sensor always indicates a reservoir full of good quality water.
3. The sensor always indicates a reservoir full of poor quality water.
4. The sensor indicates random water quality readings.

A water quality sensor failure is caused by: a broken or damaged water quality sensor assembly (replace reservoir assembly), damaged electro on the Controller Board (replace Controller Board) or poor water quality.

Before performing diagnostic procedures verify that:

1. the reservoir is free of any debris and the water quality sensor is clean
2. the reservoir is filled with good quality steam process distilled water that the water quality sensor is completely submerged. If in doubt about water quality, drain the reservoir and refill with steam-process distilled water containing less than 5 ppm total dissolved solids or having conductivity less than 10 $\mu\text{S}/\text{cm}$. See *Required Information Tools, Water Conductivity Testing*.
3. the leads of the water quality sensor are securely connected to Controller Board terminal positions labelled PROBE J4-3 and J4-4
4. nothing is connected to Controller Board terminal positions labelled FLOAT J4-5 and J4-6.
5. the Controller Board is clean and dry (both sides). Pay particular attention to terminal block J4 and components on the upper right hand portion of the board.

If the sensor requires replacement see the chapter, *Reservoir*. If the Controller Board requires replacement see the chapter, *Controller Board*.

Diagnostic Procedures

Always Indicates an Empty Reservoir		
To Verify Failure	STATIM L /5000/5000S Response	Probable Cause
Using a jumper wire, short together the PROBE terminals of the Controller Board (J4-3 and J4-4). Attempt to start a cycle.	The cycle starts. Message, "REFILL RESERVOIR" Message, "WATER QUALITY IS UNACCEPTABLE"	Controller Board Controller Board Water Quality Sensor Assembly

Always Indicates a Reservoir Full of Good Quality Water

To Verify Failure	STATIM L /5000/5000S Response	Probable Cause
Disconnect the water quality sensor leads from the PROBE terminals of the Controller Board (J4-3 and J4-4). Attempt to start a cycle.	<p>The cycle starts.</p> <p>Message, "REFILL RESERVOIR"</p> <p>Message, "WATER QUALITY IS UNACCEPTABLE"</p>	<p>Controller Board - check for a short circuit between FLOAT terminals J4-5 -J4-6.</p> <p>Water Quality Sensor Assembly</p> <p>Controller Board</p>

Always Indicates a Reservoir Full of Poor Quality Water

To Verify Failure	STATIM L /5000/5000S Response	Probable Cause
Disconnect the water quality sensor leads from the PROBE terminals of the Controller Board (J4-3 and J4-4). Attempt to start a cycle.	<p>The cycle starts.</p> <p>Message, "REFILL RESERVOIR"</p> <p>Message, "WATER QUALITY IS UNACCEPTABLE"</p>	<p>Controller Board - check for a short circuit between FLOAT terminals J4-5 and J4-6.</p> <p>Water Quality Sensor Assembly</p> <p>Controller Board - check for a short circuit between PROBE terminals J4-3 and J4-4.</p>

Random Water Quality Readings

To Verify Failure	STATIM L /5000/5000S Response	Probable Cause
Start a cycle when unit is cold.	As the cycle proceeds and the unit warms, water reported as acceptable while the unit was cold causes a "WATER QUALITY IS UNACCEPTABLE" message.	Check water quality using a conductivity meter*. If water quality is not within acceptable standards or if the reservoir has been contaminated, clean the reservoir and fill with known good quality water.
Start a cycle when unit is cold.	After a few cycles, as the unit warms a, "REFILL RESERVOIR" message is displayed.	Controller Board - using a jumper wire, short together PROBE terminals J4-3 and J4-4. If this clears the message and allows the unit to run several cycles before the message recurs, the Controller Board is defective and must be replaced.

Water Quality Sensor Notes:

Check water conductivity as indicated in *Required Information and Tools, Water Conductivity Testing*. Use only steam-process distilled water containing 5 ppm maximum dissolved solids or having a conductivity of less than 10 μ S/cm. If the water quality sensor is damaged replace the reservoir. See the chapter, *Reservoir*.

Diagnosing Beeper Problems

If the beeper, located on the Controller Board, fails to sound at appropriate times while the STATIM L / 5000/5000S is operating the cause may be:

1. A defective beeper.
2. A damaged Controller Board.

Diagnostic Procedure

1. Force the beeper ON directly by connecting the driver output (U1 pin 12, 74HC05) to the digital ground (test connector P1, pin 1) with a jumper wire. The beeper should sound when the connection is made. If not, the beeper is defective and must be replaced. See *Controller Board, Beeper Removal and Replacement*.
2. If the beeper fails to sound **and** the LCD messages are scrambled the cause may be a damaged Controller Board. See *STATIM L / 5000S Cover Removal and Replacement, LCD Removal and Replacement*.

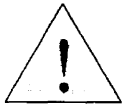
Document Change Record

Document Number: 96-103934		Title: Diagnosing Hardware Faults	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-0059

Required Information and Tools



HAZARDOUS VOLTAGES ARE ACCESSIBLE WHEN THE COVER IS REMOVED. DISCONNECT THE POWER CORD BEFORE SERVICING THE POWER MAINS PORTION OF THE CONTROLLER BOARD AND ASSOCIATED DEVICES.



A DIELECTRIC STRENGTH TEST (HI-POT) MUST BE PERFORMED ON THE STATIM L / 5000/5000S UNIT IF PARTS ASSOCIATED WITH THE MAINS PORTION OF THE CONTROLLER BOARD ARE SERVICED OR REPLACED.



A PROTECTIVE BONDING IMPEDANCE TEST (GROUND CONTINUITY) MUST BE PERFORMED ON THE STATIM L / 5000/ 5000S UNIT IF COMPONENTS OF THE PROTECTIVE EARTHING SYSTEM ARE CHANGED OR CONNECTIONS BROKEN AND REMADE.



THE STATIM L / 5000/5000S IS HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING THE UNITS.



USE ONLY STEAM-PROCESS DISTILLED WATER IN THE STATIM L / 5000/5000S.



STATIM L / 5000/5000S UNITS CONTAIN ELECTRONIC CIRCUITRY WHICH IS STATIC SENSITIVE. ALWAYS WEAR A STATIC STRAP WHEN WORKING WITH OR NEAR PRINTED WIRING BOARDS. IN ADDITION, USE STATIC FOOTSTRAPS, GROUNDING MATS AND GROUNDED WORK SURFACES WHEN SERVICING MICROPROCESSOR DEVICES. TRANSPORT BOARDS AND DEVICES IN STATIC PROTECTED BAGS.



ALWAYS PRIME THE PUMP TO AVOID STEAM GENERATOR AND THERMAL FUSE DAMAGE. NEVER ASSUME THAT THE PUMP IS PRIMED.



ENSURE THAT THERE IS SUFFICIENT STEAM-PROCESS DISTILLED WATER IN THE STATIM L / 5000/5000S BEFORE ACTIVATING THE PUMP.

Before a STATIM L / 5000/ 5000S Cassette Autoclave can be serviced the following special tools will be required in addition to your service tool kit. The tools are available from SciCan or your nearest service depot:

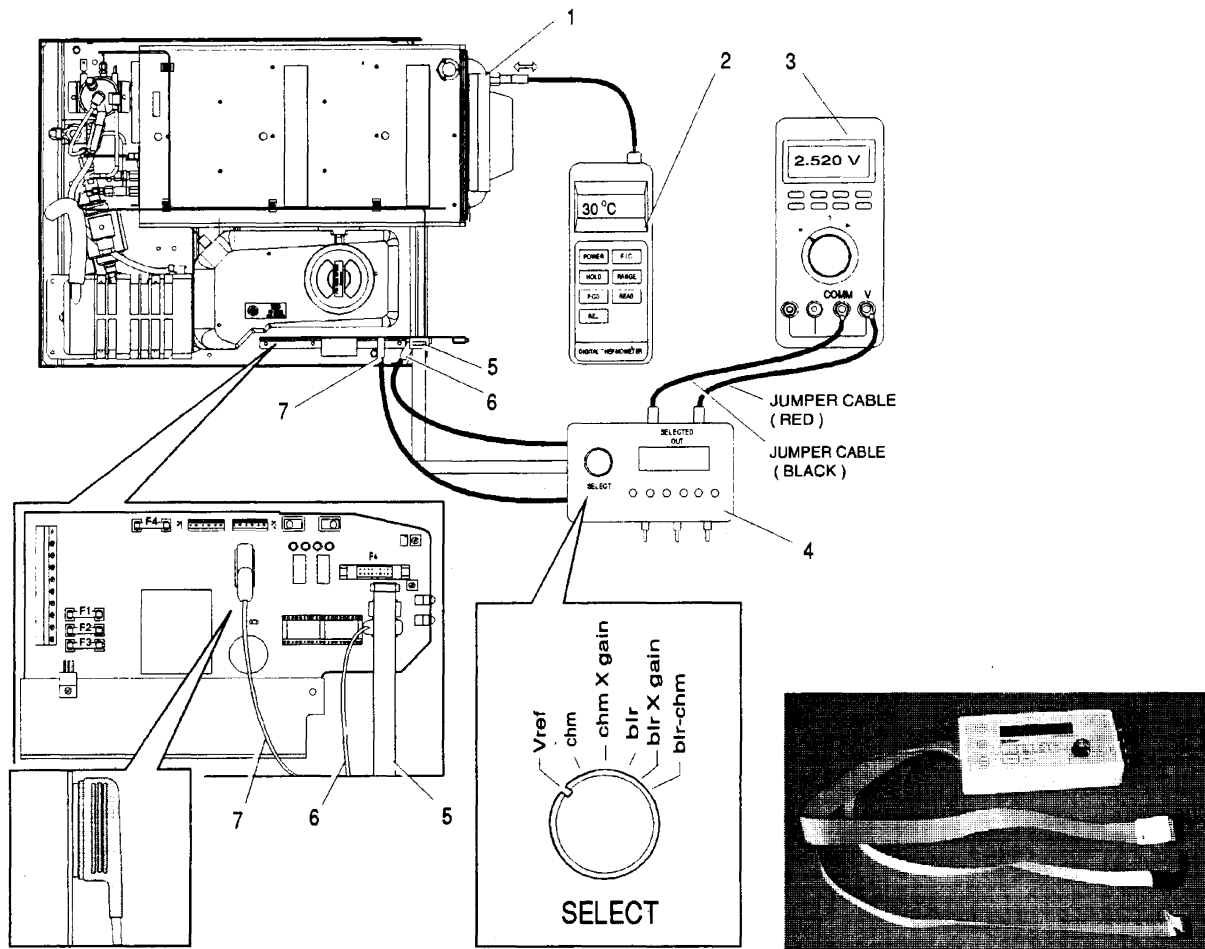
- | | |
|--|--------------------------|
| 1. Control Box | SciCan Part # 01-103141S |
| 2. Pump Tester | SciCan Part # 01-100713S |
| 3. Water Conductivity Tester | SciCan Part # 01-103139S |
| 4. Solenoid Plunger Tube Wrench | SciCan Part # 01-103471S |
| 5. 9/64" ball-end allen-key (hex) screwdriver
and for STATIM L/5000(6) or for 5000S (7) | SciCan Part # 01-103469S |
| 6. Calibration Cassette with Detachable
Thermocouple *and Digital Thermometer * | SciCan Part # 01-03664S |
| 7. Calibration Cassette, 5000S, C | SciCan Part # 01-106637S |

The additional following tools can also be purchased:

- | | |
|---|--------------------------|
| 7. Calibration Cassette | SciCan Part # 01-103088S |
| 8. Thermocouple* and Digital Thermometer* | SciCan Part # 01-103090S |
| 9. Digital Voltmeter accurate to ± 0.001 Volt | |
| 10. Hi-Pot Tester | |
| 11. Ground Continuity Tester | |
| 12. Static Strap | |
| 13. Static Bags | |

Items 1-8 are available from SciCan.

(* - the Detachable Thermocouple and Thermometer are always serial number matched together in a kit. Both must be calibrated together yearly by a quality calibration service bureau or SciCan.)



- | | |
|--|--|
| 1. calibration cassette with detachable thermocouple | 6. 1x7 cable, keypad connector (connect to Controller Board header P4) |
| 2. digital thermometer | 7. 2x10 moulded socket, test connector (connect to Controller Board header P1) |
| 3. digital voltmeter | |
| 4. control box | |
| 5. 2x7 ribbon cable, LCD connector (connect to Controller Board header P3) | |

Figure 1

The Control Box

When connecting the Control Box connectors to the Controller Board note the positions of Pin #1 of the Control Box test connectors and Pin #1 of the Controller Board headers.

There are two kinds of Control Boxes that you may encounter: one utilizes toggle switches (shown in Figure 1), the other uses a keypad arrangement similar to the keypad on the unit (photo inset).

The Control Box (4) is a service tool that allows a technician to operate the unit while it is being serviced on the bench. The Control Box has a Liquid Crystal Display (LCD) and a variety of control switches which allow the technician to:

1. Operate the unit independently of the keypad mechanism, to manually activate the pump, valve or compressor, or run cycles.
2. Make frequently used Controller Board measurements by providing a common output and rotary switch for signal selection during calibration. See the Calibration Instructions in your Service Manual.

If only the display and button functions are being used, connect the LCD cable (5) to Controller Board connector P3, the keypad cable (6) to Controller Board connector P4 and power the STATIM L/5000/5000S ON.

If the override or measurement functions are being used, connect the 2x1 cable (7) to connector P1 of the Controller Board in addition to the other cables (5 and 6).

When using a toggle switch model of the Control Box, turn the switch to the ON position to activate the desired device. To turn the device OFF turn the switch to the AUTO position. To select, start and/or stop a cycle, activate the appropriate push-button switch on top of the Control Box. Calibration utilizes the Select out +, Select out - jacks and a setting on the Rotary Switch to set the calibration operation desired for Type A Controller Boards. See, *Thermocouple Calibration*.

When using a keypad model of the Control Box, the keypad switch must be held down to turn the desired device ON. Vref measurements utilize test leads, the Vref + and Vref - banana jacks and a voltmeter hooked up in series. Calibration utilizes the Select out + and Select out - jacks, test lead and a setting on the Rotary Switch to set the calibration operation desired for Type A Controller Boards. The keypad of this Control Box provides the same features as a STATIM L/5000/5000S keypad. See, *Thermocouple Calibration*.

The Control Box is for use with STATIM products ONLY.

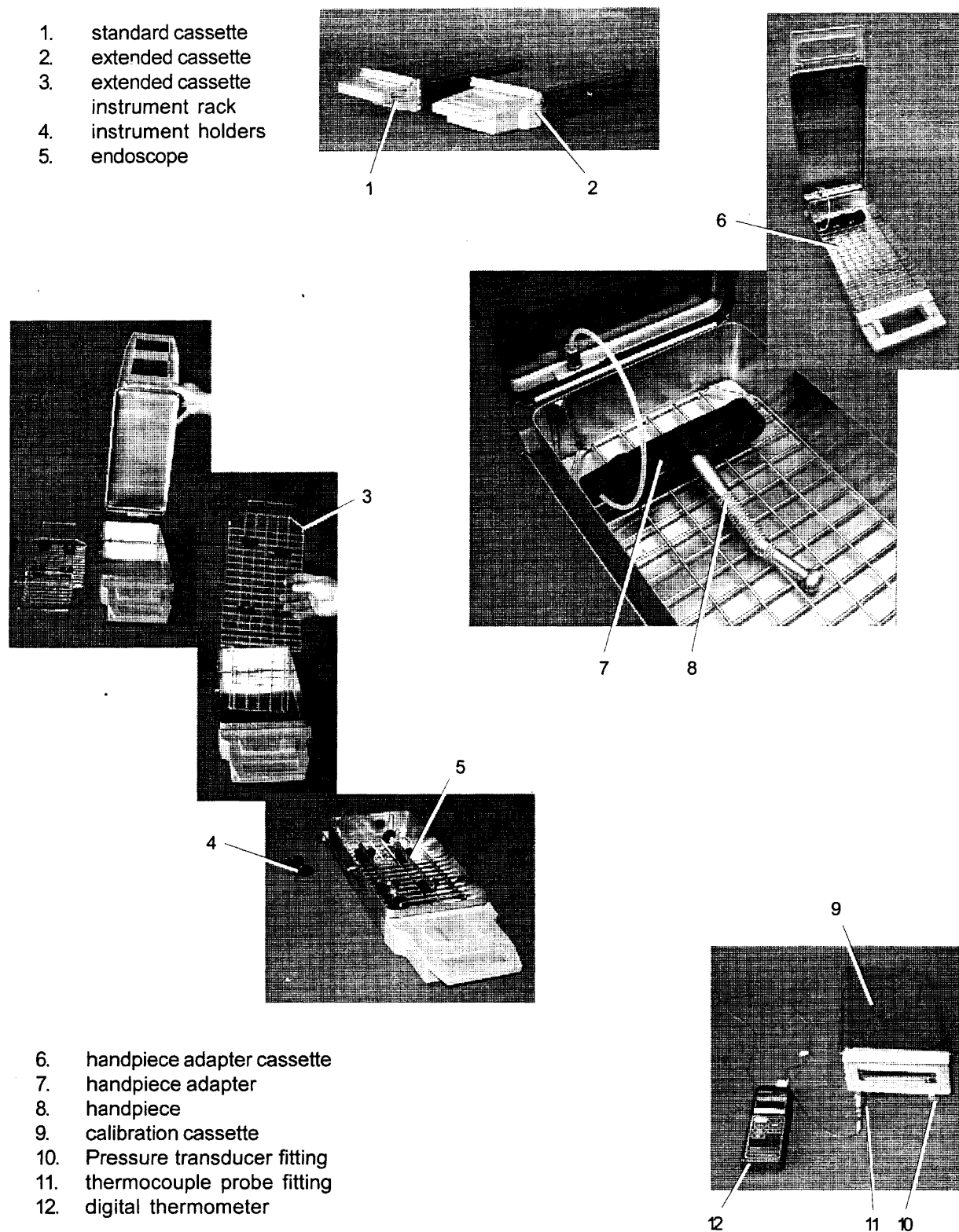
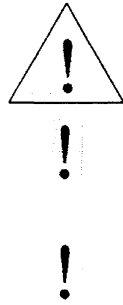


Figure 2



Cassettes

BE CAREFUL. IF THE UNIT HAS BEEN OPERATING THE METAL PART WILL BE HOT AND THE CASSETTE WILL CONTAIN HOT STEAM.

REFER TO THE INSTRUMENT MANUFACTURER'S RECOMMENDATION BEFORE LOADING ANY INSTRUMENT INTO THE STATIM L/5000/5000S CASSETTE AUTOCLAVES.

IF NATIONAL, REGIONAL, STATE, OR SAFETY AGENCY LAWS AND REGULATIONS REQUIRE THE USE OF THE OPTIONAL HANDPIECE ADAPTER AND CASSETTE FOR THE STERILIZATION OF HANDPIECES, IT WILL BE INCLUDED WITH THE STERILIZER.

There are several types of cassettes associated with STATIM L/5000/5000S Cassette Autoclaves. There is the standard cassette, the extended cassette, the handpiece adapter cassette and the calibration cassette, (See Figure 2).

Standard Cassette

The standard cassette is used in the STATIM L/5000/5000S. Internal dimensions are:

Length: 39.4cm (15.5 in.), Width: 19.6cm (7.7 in.), Height: 7.6cm (3.0 in.)

The Handpiece Adapter Cassette

The handpiece adapter cassette varies from the standard cassette by a nozzle assembly which is attached to the base of the cassette. This nozzle allows steam to be passed through the handpiece adapter. The dimensions are the same as the standard cassette.

The Extended Cassette

The extended cassette is used in the **STATIM L/5000/5000S**. It varies from the standard cassette in increased length to accommodate endoscopes. External dimensions are: Length: 56.8cm (22.25 in.), Width: 20cm (8 in.), Height: 8.5cm (3.25 in.)

The Calibration Cassette

The calibration cassette consists of a standard cassette with an attached detachable thermocouple probe and thermometer probe, as well as a port that may be used to measure the pressure with an additional pressure meter. The calibration cassette is used for calibration purposes only on **STATIM L / 5000 / 5000S** units.

Changing the Cassette Seal

Change the cassette seal (SciCan Part # 01-101649S) every 500 cycles or six months (whichever comes first) to insure optimum performance. To change the cassette seal (1) follow these steps (See Figure 3):

1. Place the cassette lid and the new seal on a clean work surface.
2. Examine the position of the old seal in the cassette lid and arrange the new seal in the same orientation, next to the lid.
3. Remove the old seal with a small screwdriver, and clean any residue out of the seal channel (See *Cleaning the STATIM L/5000/5000S Cassette*).
4. Lubricate the new seal with the liquid soap (5) provided.
5. Align the holes in the new seal (2) with the holes in the lid (3).
6. Insert the rounded edge of the seal into the channel (4) of the lid starting at the corners and gently push the seal into the channel. In each corner of the top surface of the seal, there are two small locating tabs (6). Both tabs are visible in each of the corner notches in lid channel when the seal is properly installed.
7. Check that the holes in the seal align with the holes in the lid, and that the locating tabs in the corners of the channel are visible. Run a cycle. Sometimes small bubbles appear along the seal line between the two halves of the cassette. This is most probably caused by the liquid soap used to lubricate the seal during assembly and bubbles should disappear after one or two cycles. If not, check that the seal is properly installed. If the problem persists, see the Trouble Shooting section of this manual.

If there is steam coming from the unit or water under the unit after installing the new cassette seal try another cycle. It may take time to seat the new seal. If the leak persists, remove the seal and reinstall.

BE CAREFUL. THE METAL PARTS WILL BE HOT, AND THE CASSETTE WILL CONTAIN HOT STEAM.

Cleaning the STATIM L / 5000 / 5000S Cassette

It is good clinical practice to keep the STATIM L / 5000 / 5000S cassette clean. We recommend that the interior surface of the cassette be cleaned a

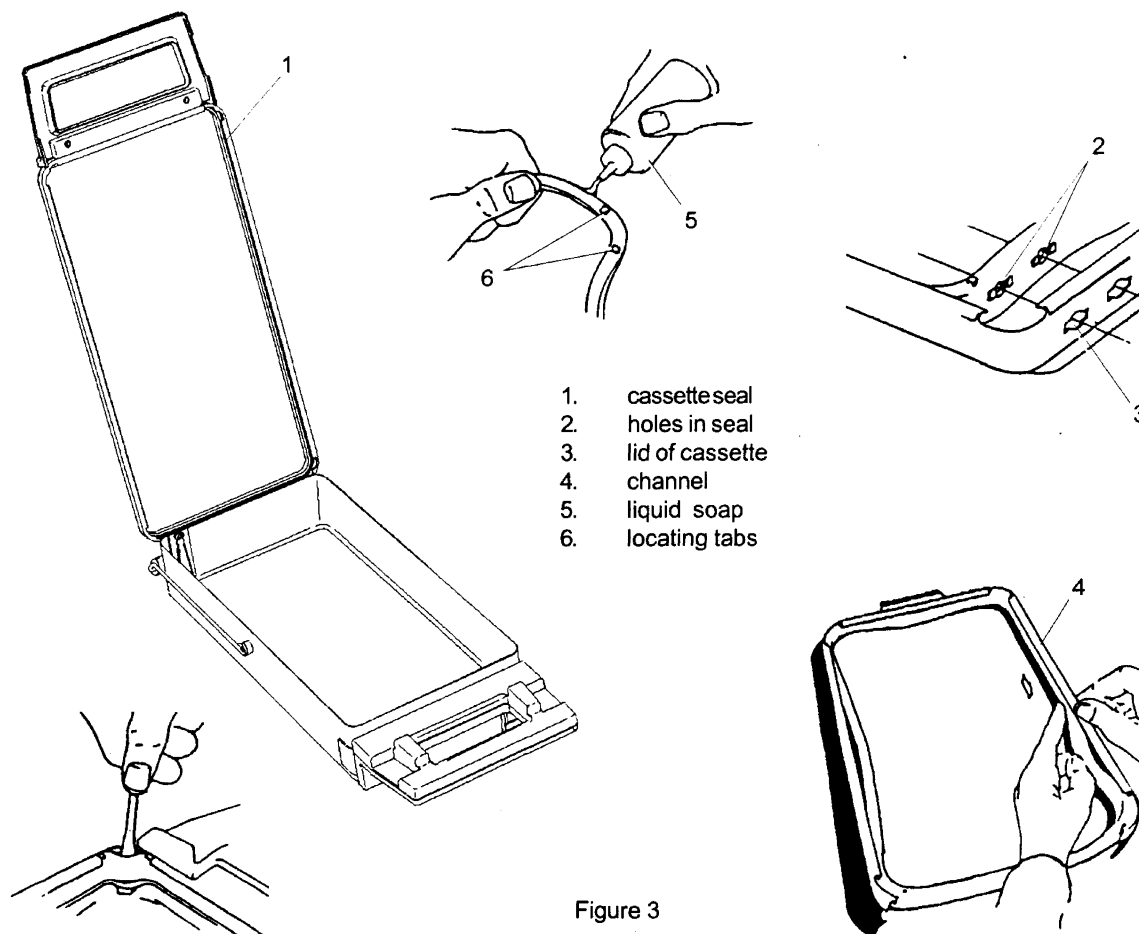


Figure 3

least once a week. Use dishwashing soap or a mild detergent that does not contain chlorine. Scrub the inside of the cassette with a cleaning pad designed for use with Teflon™ coated surfaces. After cleaning, rinse thoroughly to remove all traces of the soap or detergent.

After the cassette is clean, coat the entire inside surface with STAT-DRI. STAT-DRI causes water to form an even coat on the inside surface, without beading. The water in contact with the hot cassette surfaces evaporates much more efficiently.

Spotting is minimized and instruments dry much better. STAT-DRI is available from SciCan in a 2-ounce bottle (SciCan Part #202473) or an 8-ounce bottle (SciCan Part #802473).

Cleaning the inside of the cassette is very important if lubricated instruments are sterilized regularly.

Cleaning the STATIM L / 5000/ 5000S Enclosure

Use a soft cloth moistened with a **mild** cleaning solution or a **mild** disinfectant to clean all outside surfaces. **Do not use solvents or harsh chemicals**

Air Flow Diagram

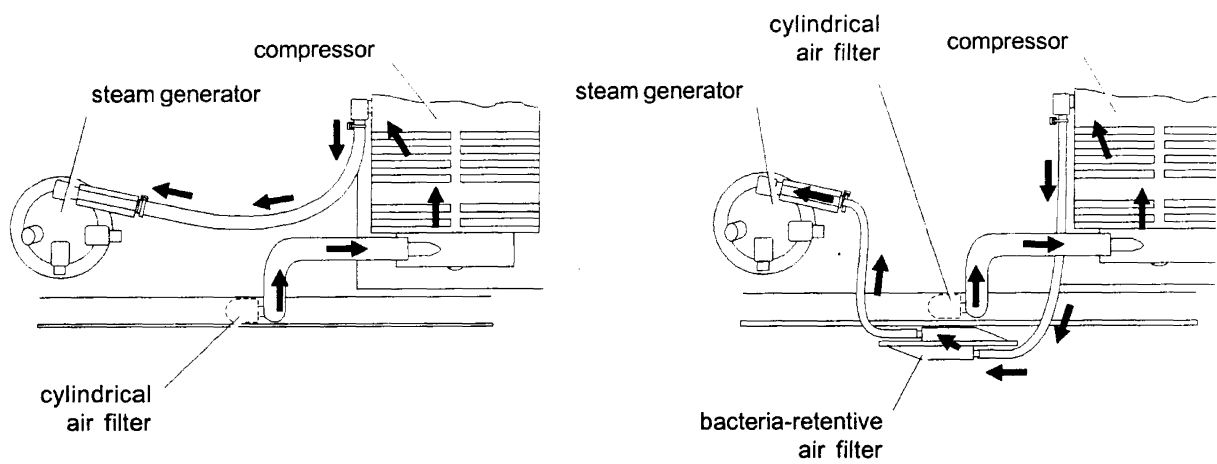
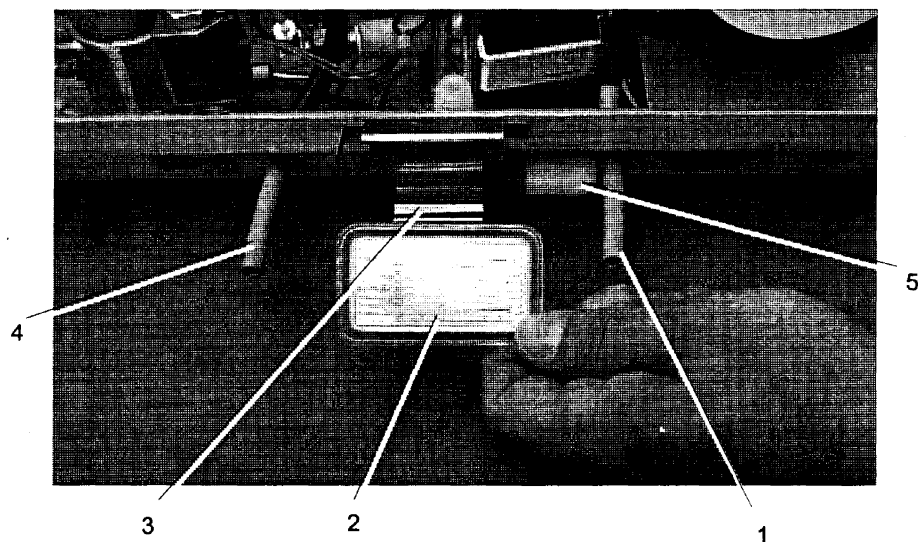


Figure 4

cylindrical air filter located
behind bacteria-retentive
filter / bracket assembly



1. tube A
2. bacteria-retentive air filter
3. filter bracket
4. tube B
5. cylindrical air filter

Figure 5

Air Filters

NEVER RE-USE AN OLD FILTER. NEVER RUN THE UNIT WITHOUT A CLEAN FILTER IN PLACE.

After each sterilization cycle the compressor forces air through the cassette to rid it of steam and to dry the instruments. The air is drawn into the compressor (see Figure 4) through two filters located at the back of the unit. STATIM L / 5000/ 5000S units draw air through a cylindrical air filter located at the rear of the unit. In addition, certain STATIM L / 5000/5000S units are manufactured with a bacteria-retentive air filter, held in a bracket, attached to the rear of the unit with a single screw. (see *STATIM L / 5000/5000S Cover Removal and Replacement*). Filters should be changed every 500 cycles or six months (whichever comes first).

Cylindrical Air Filter and Bacteria-Retentive Filter

To change both filters, follow these steps (see Figure 5):

1. Disconnect tube A (1) from the bacteria-retentive filter (2) and remove the filter from the filter bracket (3). As you remove the filter from the bracket, note the orientation of the arrow mark on the filter.
2. When the filter is free of the bracket, carefully disconnect tube B (4) from the filter. Do not pull on this tube.
3. Unscrew the cylindrical air filter (5). Discard the old filter.
4. Screw the new filter, **finger tight only**, into place.
5. Before installing the replacement bacteria-retentive filter check that the arrow mark on the filter matches the direction of the arrow on the bracket. Push the left hand filter fitting into tube B (4).
6. Gently press the replacement filter into the filter bracket. The arrow mark on the filter is facing out and pointing to the left.
7. Re-connect the tube A (1) to the right hand filter fitting.

Cylindrical Air Filter Only

To change the cylindrical air filter only, follow these steps (see Figure 5):

1. Unscrew the cylindrical air filter (5) in a counter clock-wise direction.
2. Discard the old filter.
3. Screw the new filter, **finger tight only**, into place.

Draining the Reservoir

If you must service the reservoir, ship a STATIM L / 5000/5000S, or move the unit more than a short distance, follow these directions: See Figure 6



1. To drain the water from the water reservoir, carefully move the STATIM L / 5000/5000S to the edge of the work surface. The front leveller feet (1) should be approximately 12mm (1/2 inch) from the edge so the unit remains securely seated on the work surface.
2. Lift the front left corner of the STATIM L / 5000/5000S upward and remove the drain tube (2) from the clip (3) located on the underside of the unit. Gently pull the tube out as far as possible so the free end can be positioned over a water container when the unit is lowered back to the work surface.
3. Remove the stopper (4) from the end of the drain tube and allow the water to drain from the reservoir. When water no longer drips from the drain tube, replace the stopper.
4. Lift the front left corner of the STATIM L / 5000/5000S upward, and re-insert the tube into the clip on the underside of the unit. Push the excess length of tubing back from where it came.



Shipping the STATIM L / 5000/5000S

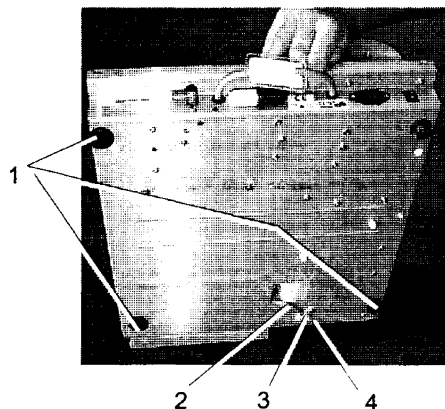
If you must ship the STATIM L / 5000/5000S, follow these directions:

1. Drain the reservoir. See, *Draining the Reservoir*.
2. **Screw in each leveller foot completely.**
3. Repack your STATIM L / 5000/5000S in the original packing materials.



1. leveller feet
2. drain tube
3. clip
4. drain tube stopper

Figure 6



4. Specify heated and insured shipping.

Safety Compliance

When a STATIM L / 5000/5000S is serviced, the safety criteria as specified by applicable international safety standards and applicable national, state, provincial, and regional laws and regulations must be observed and maintained.



Dielectric Strength Test (Hi-Pot)

EXERCISE CAUTION WHILE PERFORMING THIS TEST. HAZARDOUS VOLTAGES ARE PRESENT. DO NOT TOUCH THE UNIT, NOR ALLOW THE UNIT TO TOUCH ANY CONDUCTIVE SURFACES DURING THE TEST.

When components of the mains part are serviced or replaced, the dielectric strength of the electrical insulation between the mains and user-accessible conductive parts must be tested to ensure continued compliance of the unit with applicable international safety standards.

Perform the test using a dielectric strength (hi-pot) tester operated in accordance with the manufacturer's written instructions using the following parameters:

Test Voltage:	1500VAC RMS for North America and Japan 2200 VAC RMS for Europe (EN 61010 199)
Test Voltage Frequency:	50 or 60Hz
Test Voltage Rise Time:	2 seconds MAXIMUM
Duration at Test Voltage:	2 seconds MINIMUM
Connection Points:	a. unit chassis b. line and neutral terminals of the mains plug connected together.

For the unit being tested to pass, there must be no breakdown of the insulation nor any flashover.



Protective Earth Impedance Test (Ground Continuity)

Applicable international safety standards require that the impedance between the protective conductor terminal of the power entry connector and any user-accessible conductive parts not exceed 0.1 ohms.

If any components of the protective earthing system are changed or the connections of that system are broken and remade, the impedance of the protective bonding must be tested and verified as being less than 0.1 ohms using test equipment and procedures in compliance with applicable international safety standards and national, state, provincial, and regional

laws and regulations.

!

Water Conductivity Testing

Water conductivity testing determines the amount of dissolved solids in the steam-process distilled water used in the STATIM L / 5000/5000S unit. The maximum amount of dissolved solids allowed is 5 ppm or a conductivity of less than 10 μ /cm.

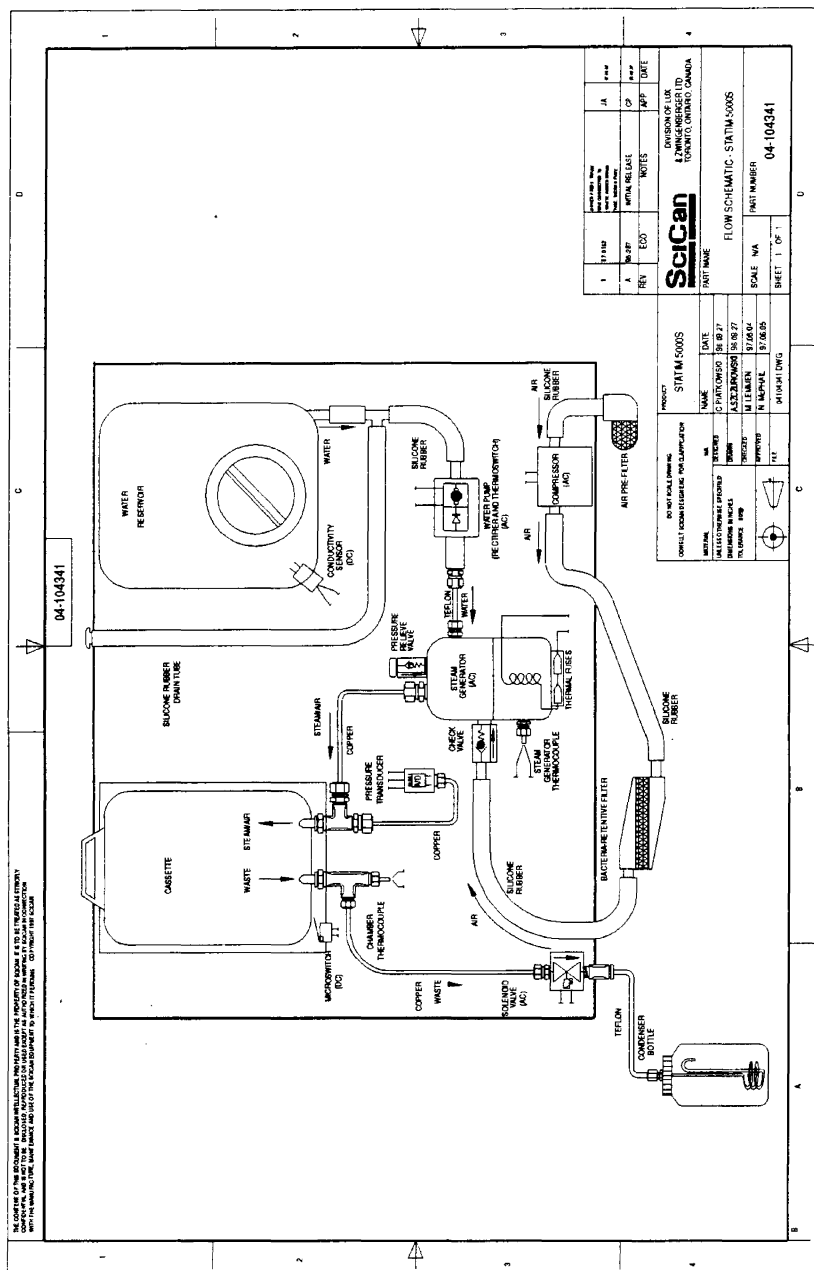
Follow the manufacturer's instructions to test water conductivity using SciCan conductivity meter, part #01-103139S, or any other meter of equivalent testing capabilities.

Temperature has a direct effect on conductivity readings, therefore the steam process distilled water being tested should be at room temperature.

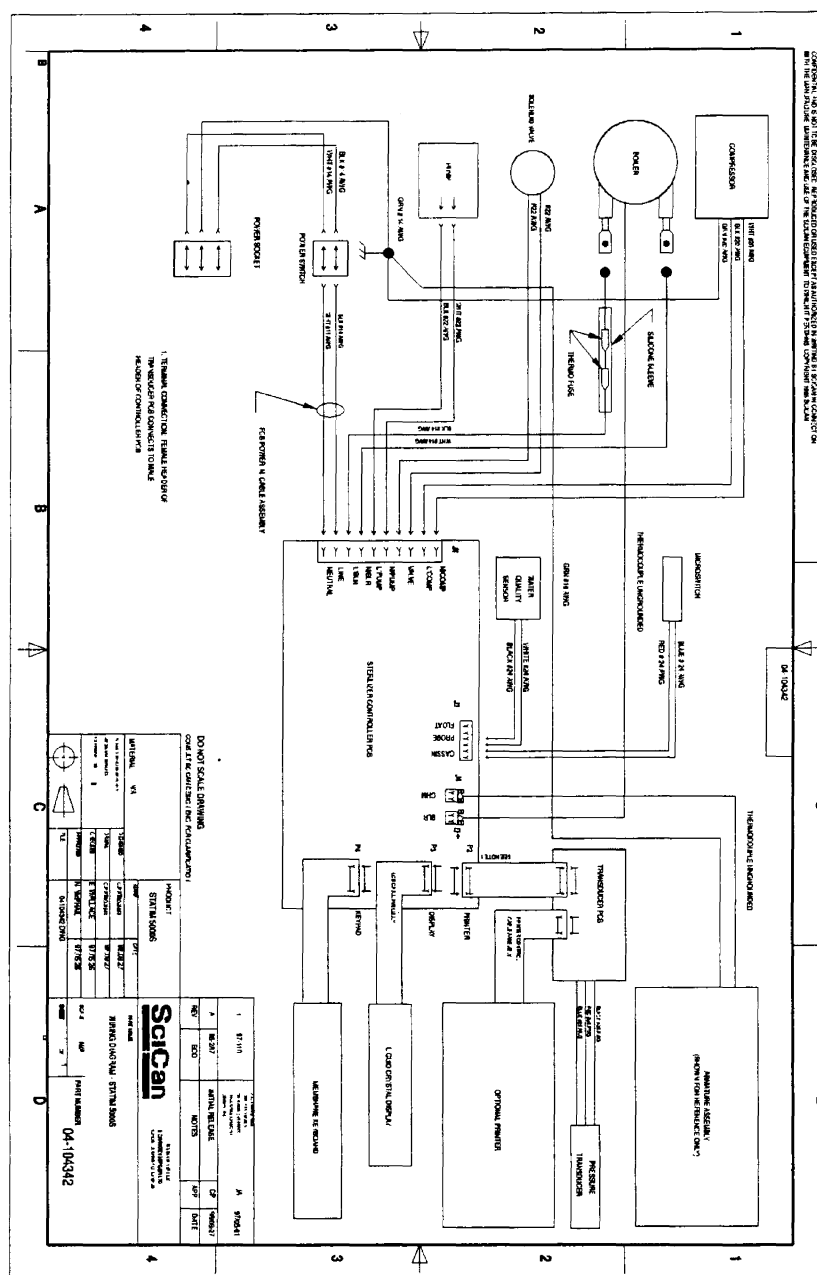


water conductivity
measurement

Figure 7



Flow Schematic



Wiring Diagram

Document Change Record

Document Number:		Title:	
96-103913		Required Information and Tools	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	98.1.24	Line art replaced with photos. Image of "keypad style" control box added. "Cassettes" added. 5000S references added. Calibration cassette Pressure fitting added. Added reference to EN 61010 and changed Hi-Pot test voltages.	98-0290
3.0	99.04.14	Added 5000S references. Added Flow Schematic and wiring diagram	99-0059

STATIM L / 5000/5000S Pumps

!

STATIM L / 5000/5000S units have been manufactured using two different pumps. Before servicing you must first determine which of the two models of pump the unit contains. (See Figure 1.0.)

!

STATIM L / 5000/5000S PUMPS MUST BE PRIMED BEFORE OPERATION. MAKE SURE THERE IS SUFFICIENT STEAM PROCESSED DISTILL WATER IN THE RESERVOIR BEFORE TESTING THE PUMPS.

Fluid-O-Tech Pump

The Fluid-O-Tech pump is a small rectangular pump with a diode plug attached to the top. The pump rests on a vibration damping pad on the bottom of the chassis and is held in place with a wire bracket. The pump is secured to the bracket by a cable tie at each end.

The black lead is attached to Controller Board J1-5 (LINE) and the white is attached to Controller Board J1-6 (NEUTRAL).

SciCan Pump

The SciCan pump has a similar footprint to the Fluid-O-Tech pump. The diode is now integral to the pump. The pump is mounted on two vibration damping rubber brackets. Each bracket is secured to the chassis with two screws.

The black lead is attached to Controller Board J1-5 (LINE) and the white is attached to Controller Board J1-6 (NEUTRAL).

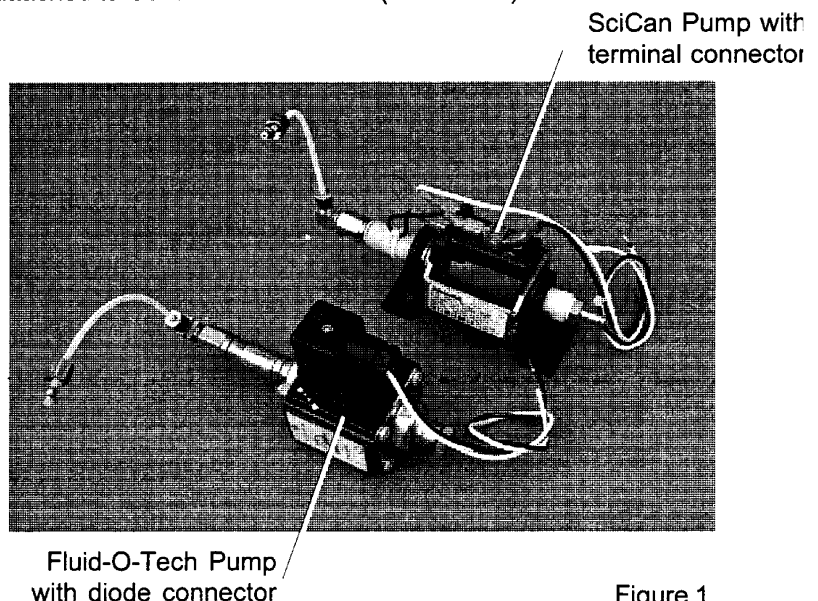


Figure 1

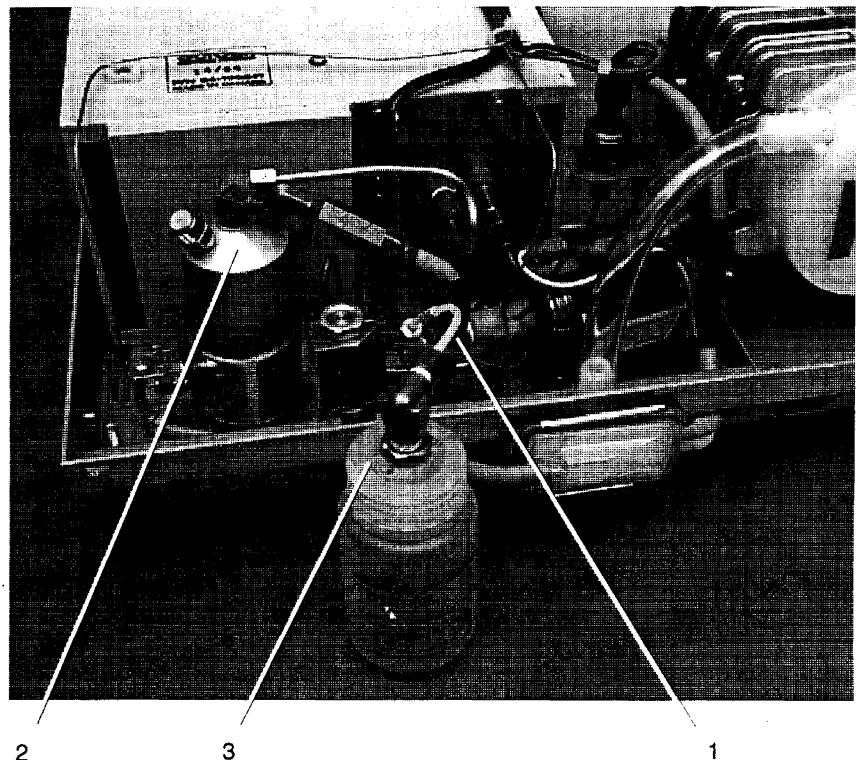
Testing Fluid-O-Tech or SciCan Pumps

To test a pump, follow these steps (see Figure 2):

1. Disconnect the Teflon™ steam generator inlet tube (1) from the top of the steam generator (2) using a 3/8 inch wrench.
2. Connect the disconnected end of the steam generator inlet tube to the pump tester (3). DO NOT CROSS THREAD THE FITTINGS. DO NOT OVERTIGHTEN.
3. Activate the pump for 2 seconds to purge any air that is trapped in the fittings. Empty any water that enters the pump tester. Recap the pump test bottle. The pump tester MUST be empty before starting the pump test.
4. Be prepared to record the time it takes for the water level displayed on the pump tester to reach the top of the line marked MIN (see Figure 7). Activate the pump using the Control Box.
5. If the water level reaches the top of the line marked MIN within the time allotted in Chart B, the pump is good. If the water level reaches the top of the line marked MIN in less than that time or if the water level does not reach the top of the line marked MIN within the allotted time, follow pump recovery repair procedures.

1. steam generator inlet tube
2. steam generator
3. pump tester

Figure 2



Fluid-O-Tech Pump Removal and Replacement

Removing the Fluid-O-Tech Pump Assembly

To remove the Fluid-O-Tech pump follow these steps (see Figure 3):

1. Remove the diode plug screw (1) and diode plug (2) from the top surface of the pump (3). If the diode is functioning, retain for reassembly. If not, replace with SciCan Part # 01-104159S. See *Testing the Fluid-O-Tech Pump Diode* for diode orientation.
2. Clip and remove the three cable ties (4) one at each end of the pump mounting bracket (5) and one holding the inlet tube (6) to the pump inlet fitting (7). Do not nick the tubing while cutting the cable ties. Remove rubber tube from the inlet fitting and clamp or stop the end of the tube securely.
3. Using a 3/8 inch wrench, remove the compression nut (8), attached to the Teflon™ tube (9), from the inlet fitting (11) on the top of the steam generator (10).
4. The pump assembly is secured to the base with the pump mounting bracket. Pull the pump assembly out of the mounting bracket and away from the steam generator.

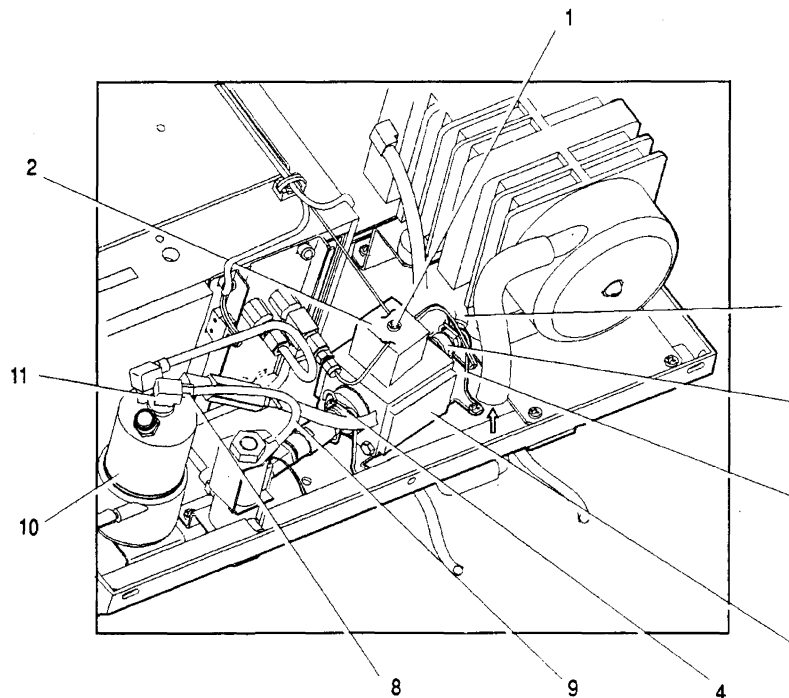


Figure 3

- | | | |
|---------------------|----------------------------|---------------------|
| 1. diode plug screw | 5. mounting bracket | 9. Teflon™ tube |
| 2. diode plug | 6. pump inlet tube | 10. steam generator |
| 3. pump | 7. pump inlet tube fitting | 11. inlet fitting |
| 4. cable ties | 8. compression nut | |

Installing the FLUID-O-TECH Pump Assembly

To install the pump assembly follow, these steps (see Figure 3):



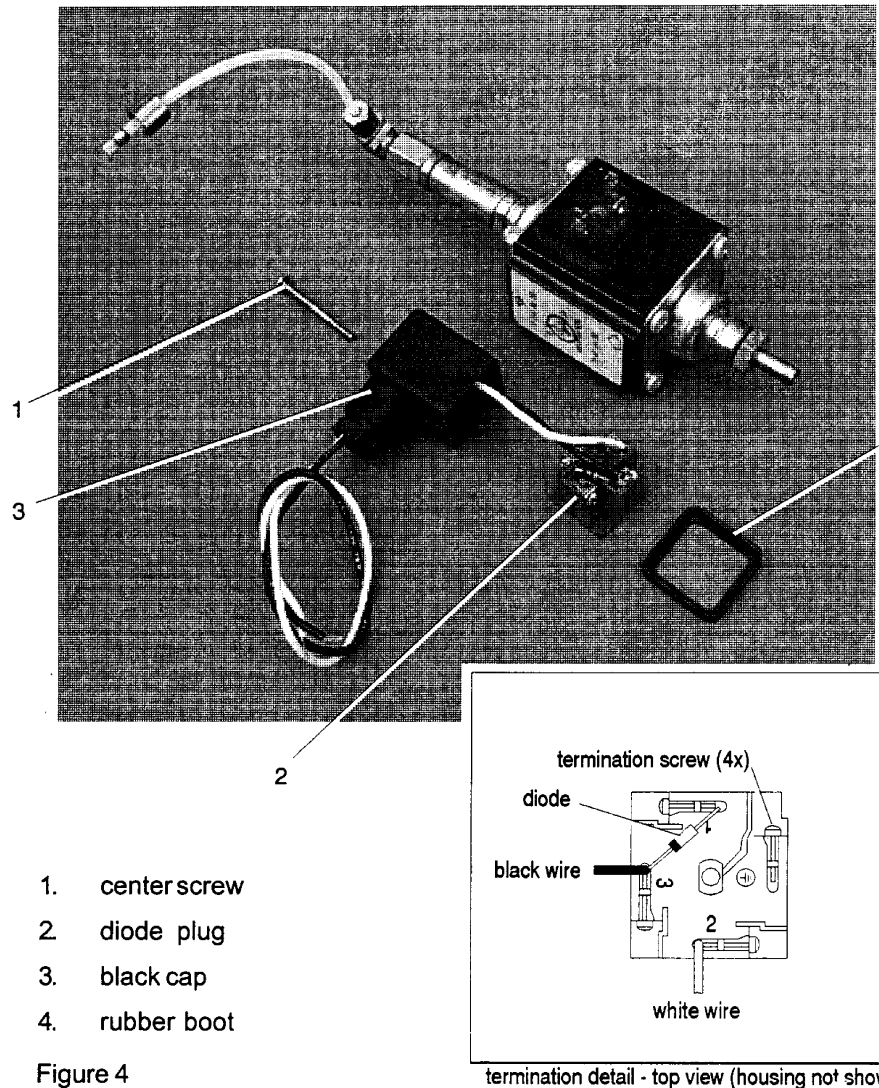
1. Slide the pump assembly, inlet side of the pump away from the boiler, into the mounting bracket and snap it into place. **DO NOT KINK THE Teflon™ TUBE (9).**
2. Push the open end of the rubber inlet tube (6) extending from the water reservoir, on to the pump inlet fitting (7) as far as it will go. Secure the tube to the fitting using a cable tie (4).
3. Attach the compression nut (8) on the Teflon™ tube to the inlet fitting (11) on top of the steam generator (10), **FINGER TIGHT**. Tighten this nut using a 3/8 inch wrench. **DO NOT OVERTIGHTEN.**
4. Re-attach the pump diode (2) using the diode plug screw (1).
5. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) **MUST** be performed on the STATIM L / 5000/5000S unit. See *Required Information and Tools*.
6. Prime the pump as described in *Priming STATIM L / 5000/5000S Pump*. Activate the pump using the control box for 5 seconds to ensure that the pump is functioning.
7. Apply one cable tie to each end of the pump mounting bracket.
8. Run any sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-outs for messages indicating cycle status.
9. Reinstall the cover. See *STATIM L / 5000/5000S Cover Removal and Replacement*.



Testing the FLUID-O-TECH Pump Diode

To test the pump diode follow these steps (see Figure 4):

1. Remove the center screw (1) from the diode plug (2), and retain for reassembly.
2. Detach the diode plug from the pump body.
3. Using a small screwdriver or similar instrument, pry away the black cap (3) from the plug.
4. Test the diode using the diode test setting on a multimeter.



Sci Can Pump Removal and Replacement

Removing the SciCan Pump Assembly

To remove the pump assembly follow these steps (see Figure 5):

1. Remove the four screws with washers securing the compressor/bracket assembly. See, *Compressor*.
2. If the pressure transducer is present disconnect the transducer connector. See, *Transducer*.
3. Remove the compression nut holding the compressor output tube to the compressor and disconnect the tube.
4. Clip and remove the cable tie (1) holding the inlet tube (2) to the pump inlet fitting (3). Do not nick the tubing while cutting the cable tie. Remove the rubber tube from the inlet fitting and clamp or stop the end of the tube securely.

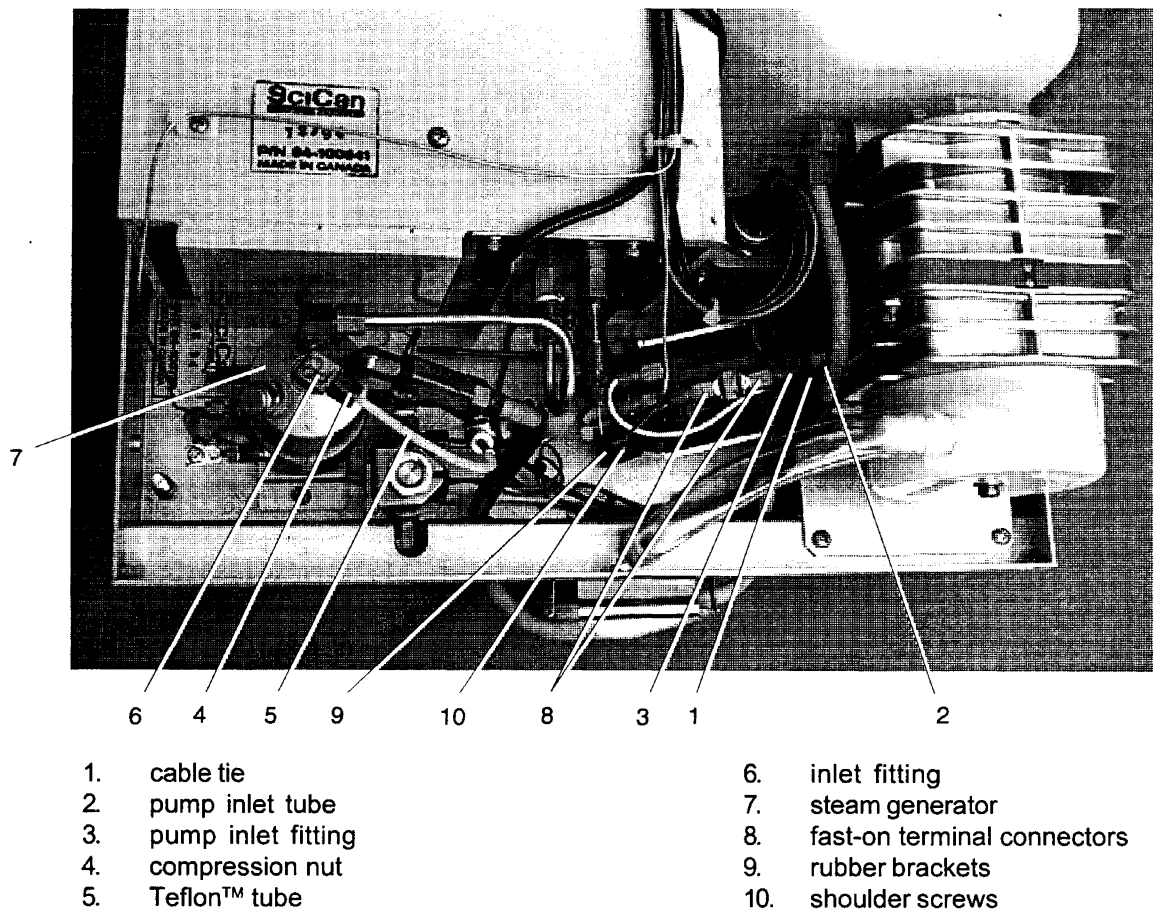


Figure 5

2. Using a 3/8 inch wrench, remove the compression nut (4), attached the Teflon™ tube (5), from the inlet fitting (6) on the top of the steam generator (7).
3. Carefully disconnect the fast-on terminal connectors (8) from the pump. Observe the position of each terminal before removal.
4. The pump assembly is secured to the chassis by rubber brackets (9) and four shoulder screws (10). Remove the four shoulder screws and retain for re-assembly. Remove the pump assembly from the chassis.

Installing the SciCan Pump Assembly

To install the pump assembly follow, these steps (see Figure 6):



1. Slide the pump assembly, inlet side of the pump away from the boiler onto the chassis. Position the rubber brackets (9) so that the mounting holes align with the threaded holes in the chassis. Secure the four shoulder screws (10) using Locktite®, Threadlock Perma-lock compound LM113 or equivalent. **DO NOT KINK THE Teflon™ TUBE.**



2. Push the open end of the rubber pump inlet tube (2) extending from the water reservoir, on to the pump inlet fitting (3) as far as it will go. Secure the tube to the fitting using a cable tie (1).

3. Thread the compression nut (4) on the Teflon™ tube (5) to the inlet fitting (6) on top of the steam generator (7), **FINGER TIGHT**. Tighten this nut using a 3/8 inch wrench. **DO NOT OVERTIGHTEN.**

4. Connect the fast-on terminal connectors (8) to the pump. The white wire is connected to the pump body, the black wire to the thermal fuse.



5. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) **MUST** be performed on the STATIM L / 5000/5000S unit. See *Required Information and Tools*.



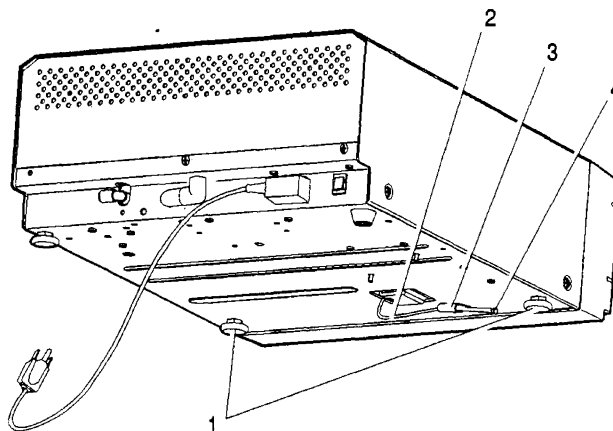
6. Prime the pump as described in *Priming STATIM L / 5000/5000S Pump*. Activate the pump using the control box for 5 seconds to ensure the pump is functioning.
7. Run any sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-outs for messages indicating cycle status.
8. Reinstall the cover. See *STATIM L / 5000/5000S Cover Removal and Replacement*.

Priming STATIM L / 5000/5000S0 Pumps

To prime a STATIM L / 5000/5000S pump, follow these steps (see Figure 7):



1. Be sure there is steam process distilled water in the reservoir.
2. Move the STATIM L / 5000/5000S to the edge of the work surface. The front leveller feet (1) should be approximately one half inch from the edge so the unit remains securely seated on the work surface.
STATIM L / 5000/5000S UNITS ARE HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING A UNIT.
3. Lift the front left corner of the STATIM L / 5000/5000S upward and remove the drain tube (2) from the clip (3) located on the underside of the unit. Gently pull the tube out as far as possible so the free end can be positioned over a water container after the unit is lowered back to the work surface.
4. Remove the stopper (4) from the end of the drain tube and allow the water to drain from the reservoir. Allow a strong steady stream to flow into the container for a minimum of 30 seconds.
5. Replace the stopper.
6. Lift the front left corner of the STATIM L / 5000/5000S upward and re-inse the tube into the clip on the underside of the unit. Push the excess length of tubing back from where it came.



1. leveller feet
2. drain tube
3. clip
4. stopper

Figure 7

Water Pump Recovery Repair Procedure

A pump assembly may become defective due to foreign material caught inside the assembly, blockage of an orifice or mechanical wear of internal parts. Before replacing a pump that is performing poorly, attempt to recover the unit by cleaning the filter(s) and/or resizing the pump tube.

Pump Filter Cleaning

NOTE: EACH TIME THE PUMP IS SERVICED THE PUMP FILTERS SHOULD BE CLEANED. FOR PREVENTITIVE MAINTENANCE, PUMP FILTERS SHOULD BE CLEANED EVERY 500 CYCLES OR 6 MONTHS.

The inlet fitting of the pump contains a mesh filter. Most SciCan pumps also have a filter in the outlet fitting. To clean pump components that may have scale or mineral deposits, soak the components in a mild solution suitable for removing scale or mineral deposits (eg. vinegar) until the deposits have been dissolved. Rinse with clean water. To remove and clean the filters follow these steps (see Figure 6):

1. Drain the reservoir (1). See, *Required Information, Tools and Routine Maintenance, Draining the Reservoir.*
2. Remove the four screws with washers (2) securing the compressor/ bracket assembly (3). See, *Compressor.*
3. If the pressure transducer (4) is present disconnect the transducer connector (5). See *Transducer.*
4. Remove the compression nut (6) holding the compressor output tube (7) to the compressor and disconnect the tube.
5. Rest the compressor/bracket assembly to one side to access the pump.
6. Cut the cable tie (8) holding the pump inlet tube (9) to the pump inlet fitting (10). Disconnect the tube.
7. Using a 3/8 inch wrench disconnect the white Teflon™ tube (11) from the pump outlet fitting (12). Soak the tube until any deposits have been dissolved. Rinse with clean water.
8. Using a 9/16 inch wrench on the pump inlet fitting and a 9/16 inch wrench on the pump body inlet fitting (13), unscrew the inlet fitting.
9. There is a mesh filter (14) inside the pump inlet fitting and a rubber seal (15) on the outside threaded end of the fitting. From the threaded end of the fitting, insert a blunt instrument and gently push the filter out. If the filter does not come out, soak the fitting until the deposits have been dissolved. Rinse with clean water.
10. Inspect the filter and remove any debris. If the filter is damaged, replace the pump inlet fitting. If not, soak the fitting until the deposits have been dissolved. Rinse with clean water.

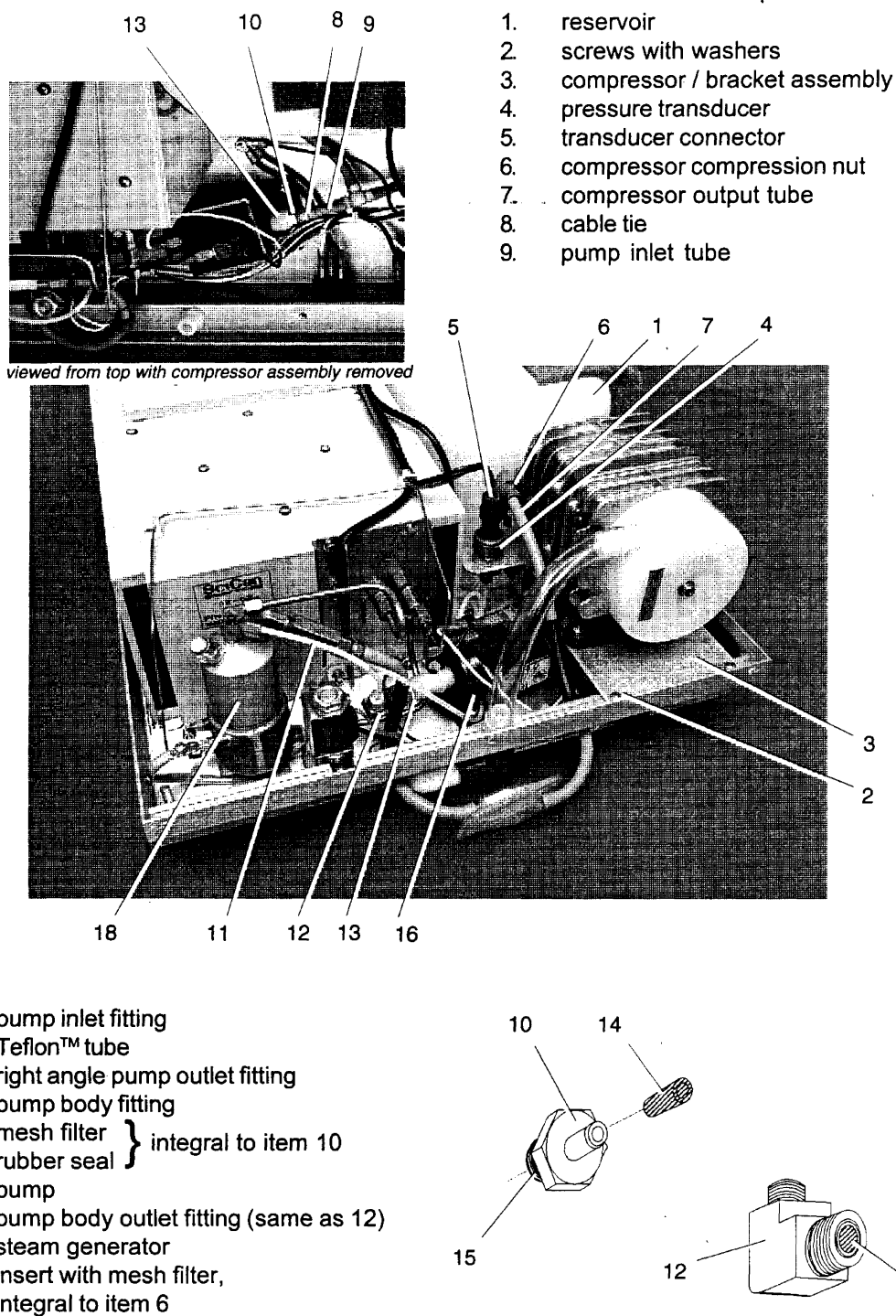


Figure 6



6. Insert the filter and reassemble the inlet fitting to the pump body inlet fitting. Ensure that the rubber seal is in place. Tighten the fitting finger tight and using a 9/16 inch wrench, tighten one half turn.
7. Using a 7/16 inch wrench, disconnect the right angle fitting from the pump body outlet fitting (17) and clean the threads of any debris. Note the orientation of the fitting relative to the steam generator (18).
8. There is an insert (19) containing a fine mesh filter in the end of the angle fitting. Soak the fitting and filter in a mild solution suitable for removing scale or mineral deposits (ie. vinegar). Rinse thoroughly with clean water.
9. If the filter is damaged, replace the outlet fitting (10). When the components are clean, apply a small amount of thread lock tape or compound and reassemble the right angle fitting to the pump body outlet fitting. Tighten the fitting finger tight and using a 7/16 inch wrench, tighten one half turn. Ensure that the Teflon™ tube will reach the top of the steam generator. **DO NOT KINK THE TEFLON™ TUBE.**
10. Run a sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-outs for messages indicating cycle status.

Pump Tube Replacement



DISREGARD THE TEST INSTRUCTIONS FOUND ON THE PUMP TEST

A replacement tube kit contains 5 tubes, each labelled to show the orifice diameter and flow direction.



IF A SUITABLE REPLACEMENT TUBE IS NOT FOUND IN THE TUBE KIT, INSTALL A NEW PUMP.



DO NOT KINK THE Teflon™ TUBE.

To install and test the pump tube replacement, follow these steps (see Chart A, Chart B and Figures 7 and 8):

1. Power the unit OFF, remove the cover and connect the Control Box. See, *Required Information and Tools, The Control Box.*
2. Using a 3/8 inch wrench disconnect the Teflon™ steam generator inlet tube (1) from the top of the steam generator (2). Disconnect the other from the pump outlet fitting (3). Record the orifice diameter if available and discard the tube.
3. Select the nominal size tube from the appropriate kit indicated in Chart A.

Replacement Tube Kits - Chart A

(*STATIM - information in this chart applies to STATIM L / STATIM 5000/5000S

Unit/ Voltage Rating	Nominal Tubing	Tubing Range	Kit Number
*STATIM 100V	0.0275	0.0295 - 0.0255	01-104177S
*STATIM 115V	0.0265	0.0285 - 0.0245	01-104178S
*STATIM 230V	0.0250	0.0270 - 0.0230	01-104179S

Pump Test Parameters - Chart B

(information in this chart applies to STATIM L / STATIM 5000/500S units)

Pump Type	Unit Voltage Rating							
	100V 50Hz		100V 60Hz		110V 60Hz		230V 50Hz	
	seconds		seconds		seconds		seconds	
	min.	max.	min.	max.	min.	max.	min.	max.
Fluid-O-Tech Pump	21.5	23	23.5	25	NA	NA	21.5	23
SciCan Pump	18.5	20	21.5	23	21.5	23	21.5	23

NA - not available.

max. / min. numbers represent time in seconds required to fill the test bottle to the MIN. line

1. steam generator inlet tube
2. steam generator
3. pump outlet fitting
4. replacement tube
5. pump test bottle

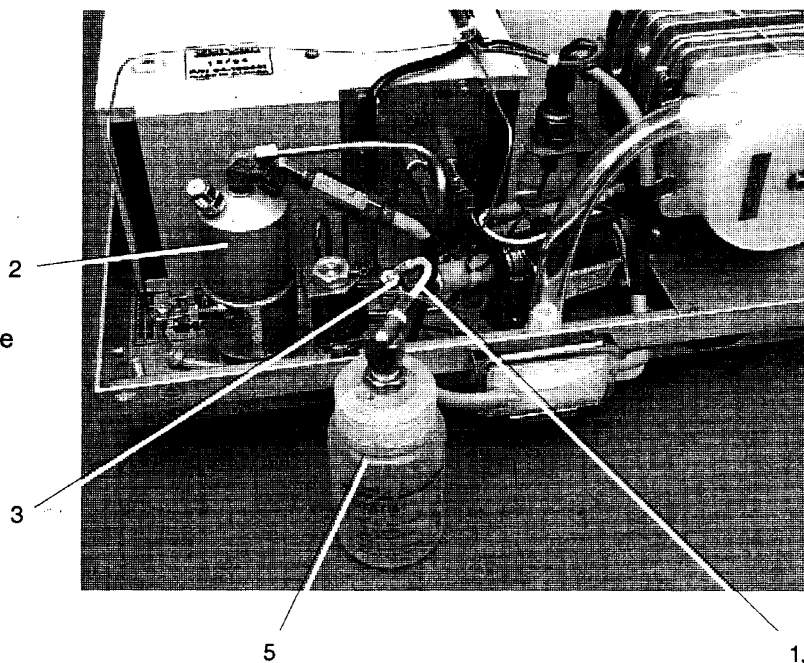


Figure 7

!

4. Connect the pump end of the tube to the pump outlet fitting. A label the tube indicates the tube orifice diameter. An arrow on the label indicates the direction in which the tube must be installed. The arrow MUST point towards the steam generator when installed.
5. Thread the other end of the replacement tube (4) to the fitting (5) or pump test bottle (6), FINGER TIGHT. DO NOT CROSS THREAD T FITTINGS. DO NOT OVERTIGHTEN.
6. Power the unit ON and activate the pump using the control box for 2 seconds to purge air that may be trapped in the fittings. Empty any that may enter the pump test bottle and reattach the cap.
7. Activate the pump using the control box and record the time it takes the water level to reach the line marked MIN (see Figure 7).
8. If the water level reached the top of the line marked MIN in less than minimum allotted time, proceed to test the next smallest tube from the replacement tube kit. (See Chart B.) Follow steps 4 through 7. If flow requirements cannot be met using the smaller diameter tubes provided in the kit, replace the pump.
9. If the water level in the pump test bottle was below the top of the "MIN" line after the maximum allotted time proceed to test the next largest from the replacement tube kit. Follow steps 4 through 7. If flow requirements cannot be met using the larger diameter tubes provided in kit, replace the pump.

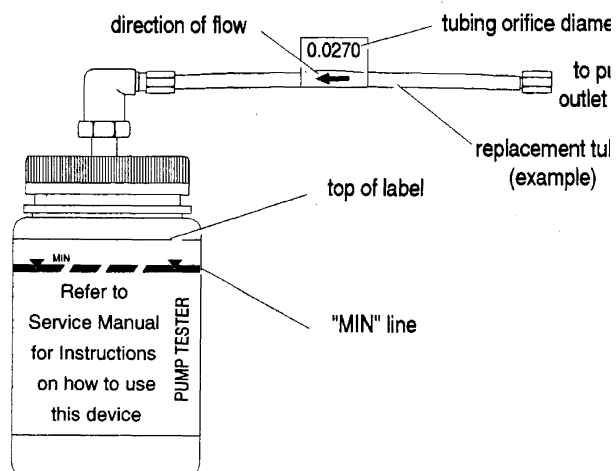


Figure 8



10. Once a test proves successful, disconnect the test bottle. Using a 3/8 inch wrench connect the replacement tube to the top of the steam generator.
11. Make sure there is sufficient steam-process distilled water in the reservoir and activate the pump using the Control Box for 5 seconds to ensure that the pump is functioning and observe all affected fitting for leaks.
12. Calibrate the steam generator thermocouple. See, *Steam Generator Thermocouple Calibration*.
13. If the pump is replaced a dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) MUST be performed on the STATIM L 5000/5000S unit. See *Required Information and Tools*.
14. Run a sterilization cycle and observe all fittings and tubes for leaks. LCI read-outs for messages indicating cycle status.
15. Reinstall the cover. See STATIM L 5000/5000S *Cover Removal and Replacement*.

Document Change Record

Document Number: 96-103915		Title: STAT/ML / 5000/5000S Pumps	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	96.05.29	Line art replaced with photographs. Text changed to reflect additions to Water Pump Recovery Repair Procedure.	98-0290
3.0	99.04.14	Changes to pump replacement section and 5000S added	99-0059

Solenoid Repair, Removal and Replacement

Inspecting and Repairing the Solenoid Valve

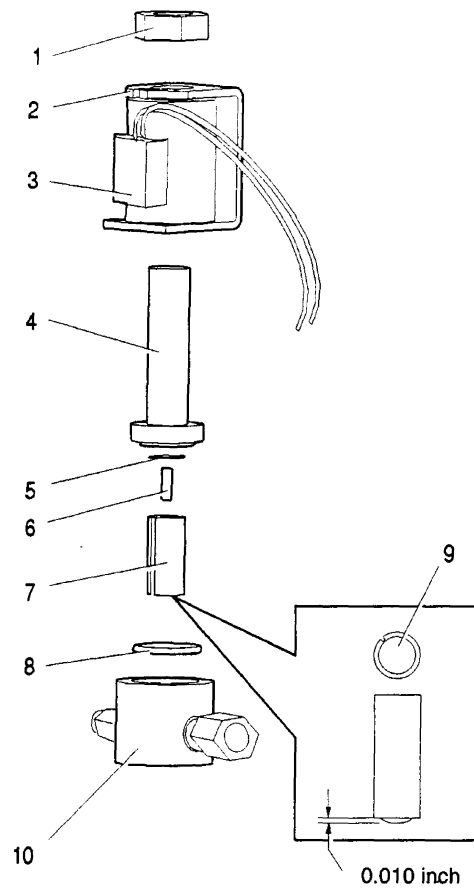
The solenoid valve assembly may be inspected and/or repaired while in unit. To inspect and/or repair the assembly, follow these steps (see Figure

1. To determine that the solenoid is working, test the solenoid valve by using the solenoid valve switch on the Control box. When the switch is activated, the sound of the coil energizing can be heard. **REMOVE UNSEAT THE CASSETTE SO THAT THE MICROSWITCH IS NOT ACTIVATED.** See, *Required Information and Tools, the Control Box*
2. Turn the power switch OFF, and unplug the unit. If the solenoid is activated during disassembly the coil will be damaged.
3. Disconnect the solenoid leads from the Controller Board terminal block positions labelled J1-7 LINE and J1-8 NEUTRAL (see items 1 & 2, Figure 2). If the coil has failed, replace the coil assembly.
4. Remove the nut (1) from the top of the solenoid valve assembly using an 11/16 inch wrench.
5. Pull the yoke (2) and coil (3) off the plunger tube (4) in an upward direction. Note the orientation of the yoke and coil for reassembly. To allow the coil to rest inside the unit, cut any cable ties required.
6. Unscrew the plunger tube from the valve body using the solenoid plunger tube wrench and check that the plunger is moving freely in valve body. See, *Required Information and Tools*.
7. Remove the plunger (7), plunger spring (6) and bronze disc (5) from valve plunger tube body.
8. Inspect the o-ring (8) and the plunger seal (9) for nicks, compression set or swelling (the seal should not extend more than 0.010 inch from the plunger body).

NOTE: WEARING OF THE AFLAS SEAL IS A COMMON REASON FOR VALVE FAILURE.

9. Inspect the valve body (10) for debris. If the debris appears to be fragments of rubber, inspect the cassette seal for damage.
10. Clean the valve plunger, valve body and fittings using oil free compressed air to blow debris from the surfaces.

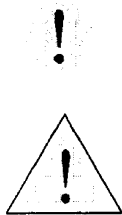
Once the valve components have been inspected, determine if assembly needs cleaning only, a new coil, the repair kit for the solenoid valve or an entire valve assembly. See *Spare Parts*.



- | | |
|-----------------|-------------------|
| 1. nut | 6. plunger spring |
| 2. yoke | 7. plunger |
| 3. coil | 8. o-ring |
| 4. plunger tube | 9. plunger seal |
| 5. bronze disc | 10. valve body |

Figure 1

11. Reinstall or replace; the bronze disc (5), plunger spring (6), plunger (7) and o-ring (9) to the plunger tube (4). (Order SciCan Part # 01-100998S.)
12. Screw the plunger tube into the valve body (8) and tighten using the solenoid tube wrench.
13. Place the coil (3) inside the yoke (2) and place onto the plunger tube.
14. Reinstall the coil retaining nut (1), using an 11/16 inch wrench and tighten.
15. Connect the leads to Controller Board (2) terminal block position labelled J1-7 LINE and J1-8 NEUTRAL. These wires are interchangeable in the positions.
16. Test the solenoid by activating the solenoid switch on the Control board. **REMOVE OR UNSEAT THE CASSETTE SO THAT THE MICROSWITCH IS NOT ACTIVATED.** See, *Required Information and Tools, the Coil Box.*
17. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) **MUST** be performed on the STATIM L / 5000/5000S unit. See *Required Information and Tools*.
18. Replace any cable ties cut during the procedure.
19. Reinstall the cover. See, *STATIM L / 5000/5000S Cover Removal and Replacement.*



Removing the Solenoid Valve

To remove the solenoid valve follow these steps (See Figure 2):

1. Turn the power switch OFF, and unplug the unit.
2. Carefully cut the cable ties holding the solenoid valve leads and disconnect the leads (1) from the Controller Board (2) terminal block positions labelled J1-7 LINE and J1-8 NEUTRAL.
3. Disconnect the compression nut (3) holding the outlet probe tube (4) from the outlet fitting (5) on the probe bracket assembly.
4. Remove the two screws (6) that attach the solenoid valve bracket (7) to the chassis (8): one on the inside of the chassis, one on the out rear surface of the chassis.
5. Inspect the solenoid valve to determine whether servicing or replacement is warranted. See, *Repairing the Solenoid Valve Assembly.*

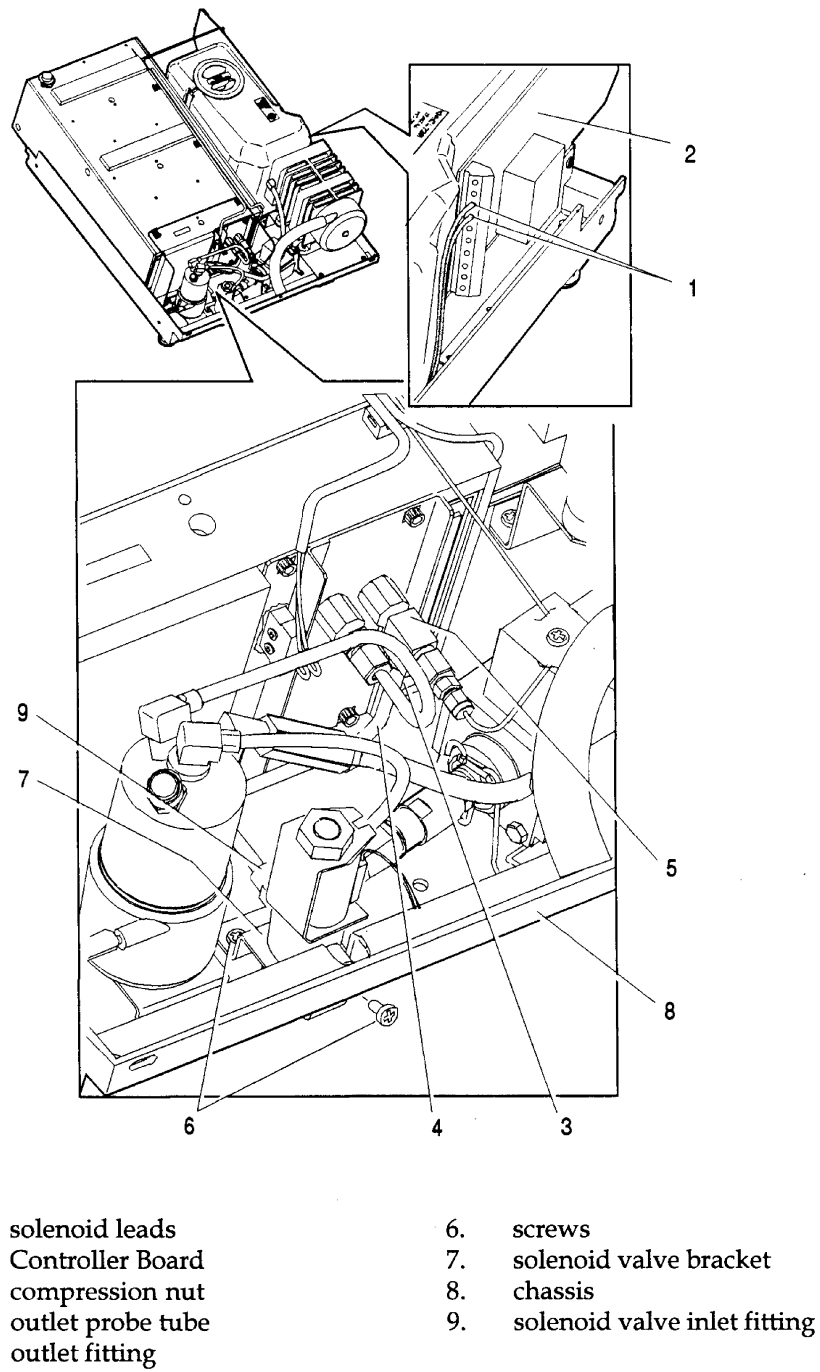


Figure 2

Replacing the Solenoid Valve

To replace the solenoid valve assembly, follow these steps (see Figure 2)

!

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1. Connect a new outlet probe tube (4) to the solenoid valve inlet fitting (1). Thread the compression nut, finger tight, on the inlet fitting. Tighten nut using a 7/16 inch wrench. **DO NOT OVERTIGHTEN.**
2. Connect the other end to the outlet probe fitting on the probe bracket assembly (5). Thread the compression nut, finger tight, on the inlet fitting. Tighten the nut using a 7/16 inch wrench. **DO NOT OVERTIGHTEN.**
3. Attach the solenoid valve bracket (7) to the chassis (8) using the two screws (6) retained from disassembly: one on the inside of the chassis, one on the outer rear surface of the chassis.
4. Route the wires from the solenoid valve coil together with the bundle wires extending to the Controller Board (2) and connect the leads to Controller Board terminal positions labelled J1-7 LINE and J1-8 NEUT (see Figure 2). These wires are interchangeable in the positions.
5. Bundle the wires together and secure them using cable ties every 2 inches.
6. Test the solenoid by activating the solenoid switch on the Controller Board. **REMOVE OR UNSEAT THE CASSETTE SO THAT THE MICROSWITCH IS NOT ACTIVATED.** See, *Required Information and Tools, the Control Box.*
7. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) **MUST** be performed on the STATIM L / 5000/5000S unit. See *Required Information and Tools.*
8. To reinstall the cover see, *STATIM L / 5000/5000S Cover Removal and Replacement.*

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Document Change Record

Document Number: 96-103919		Title: Solenoid Valve Repair, Removal and Replacement	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S information	99-0059

Steam Generator

There are two types of steam generators which you may encounter while servicing a STATIM L / STATIM 5000/5000S unit. One steam generator has a set of four stand-offs on the bottom for locating the thermal fuse. The other has two sets of four stand-offs on the bottom. See, *Steam Generator Thermal Fuse*.

Removing the Steam Generator



CAUTION: THE STEAM GENERATOR MAY BE HOT IF THE UNIT HAS BEEN OPERATING. GUARD AGAINST BURNS.

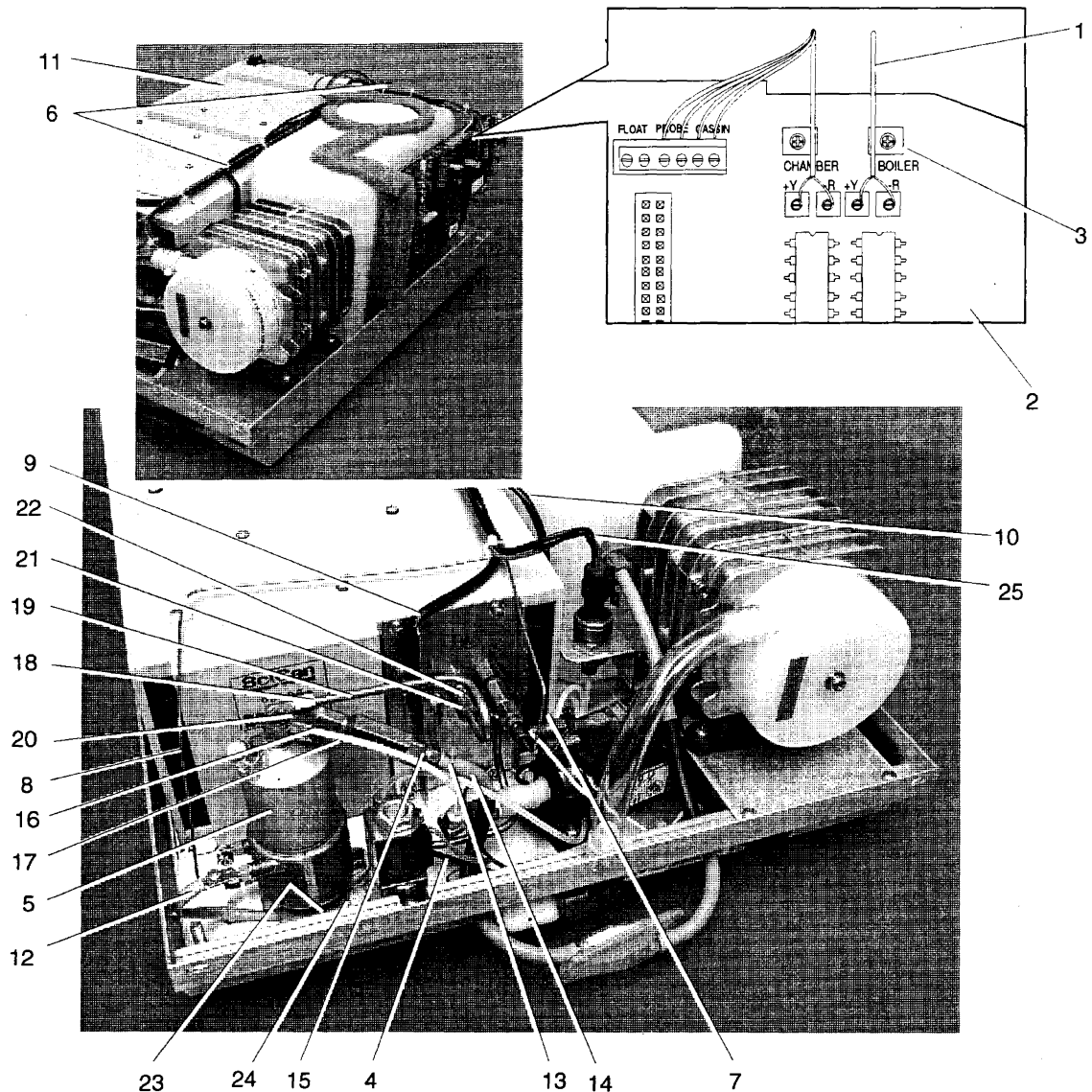
To remove the steam generator, follow these steps (see Figure 1):

1. Turn the power switch OFF, and unplug the unit.
2. Disconnect the steam generator thermocouple wires (1) from Controller Board (2) terminal positions BOILER +Y and -R and disconnect the flag terminals (3) from the position marked BOILER directly above the terminals. Leave the screws with contact washers in the terminals.



NOTE: ENSURE THAT THE FLAG TERMINALS ARE SECURELY FASTENED UNTIL THE THERMOCOUPLE WIRES ARE DISCONNECTED. THERMOCOUPLE WIRES ARE FRAGILE!

3. Disconnect the black thermal fuse (4) wire from Controller Board connector terminal block J1-3. See, *Steam Generator Thermal Fuse*.
4. Trace the path of the black wire back to the base of the steam generator (5). Carefully cut all cable ties holding the black wire.
5. Carefully cut the cable ties (6) securing the chamber thermocouple leads (7), steam generator thermocouple lead (8), microswitch leads (9), reservoir sensor leads (10) and the transducer leads (25), if present, to the armature (11).
6. Disconnect the white wire (12) attached to the terminal on the lower half of the steam generator.
7. Carefully cut the cable tie (13) holding the compressor tube (14) onto the check valve inlet (15) and pull the tube off the valve.
8. Using a 3/8 inch wrench, disconnect the compression nut (16) holding the Teflon™ tube (17) from the top of the steam generator.
9. Using a 7/16 inch wrench, disconnect the compression nut (18) holding the steam generator outlet tube (19) to the steam generator outlet fitting (20).
10. Disconnect the compression nut (21) holding the steam generator outlet tube to the probe bracket inlet fitting (22).
11. Remove the two screws (23) holding the steam generator bracket assembly (24) to the chassis and remove the steam generator. See, *Steam Generator Thermal Fuse*.



- | | |
|---------------------------------------|--------------------------------------|
| 1. steam generator thermocouple wires | 13. high temperature rated cable tie |
| 2. Controller Board | 14. compressor tube |
| 3. flag terminal | 15. check valve inlet |
| 4. black thermal fuse wire | 16. compression nut |
| 5. steam generator | 17. white Teflon™ tube |
| 6. cable ties | 18. compression nut |
| 7. chamber thermocouple lead | 19. steam generator outlet tube |
| 8. steam generator thermocouple lead | 20. steam generator outlet fitting |
| 9. microswitch leads | 21. compression nut |
| 10. reservoir sensor leads | 22. probe bracket inlet fitting |
| 11. armature | 23. screws (obscured) |
| 12. white wire | 24. steam generator bracket assembly |
| | 25. transducer leads (if present) |

Figure 1

Replacing the Steam Generator

To replace the steam generator, follow these steps (see Figure 1):

1. Make sure the power switch is OFF, and the unit is unplugged.
2. Carefully install the steam generator assembly (24) to the chassis using two screws (23). Start the screws into the tapped holes but do not tighten the screws. See, *Steam Generator Thermal Fuse*.


BE CAREFUL NOT TO BEND THE THERMOCOUPLE LEADS TO SHARPLY (MIN. BEND RADIUS - 3/16 INCH / 5MM). RETAIN THE PROTECTIVE SLEEVE ON THE CONTROLLER BOARD END OF THE THERMOCOUPLE LEADS AS LONG AS POSSIBLE. DO NOT CRUSH OR PINCH THE THERMAL FUSE LEAD.

3. Connect the compression nut (18) holding the steam generator outlet tube (19) to the top of the steam generator outlet fitting (20) and the compression nut (21) holding the steam generator outlet tube to the probe bracket inlet fitting (22). Thread the nuts finger tight, then tight using a 7/16 inch wrench. **DO NOT OVERTIGHTEN.**
4. Tighten the two screws (23) holding the steam generator bracket assembly (24) to the chassis.
5. Connect the compression nut (16) holding the white Teflon™ tube (17) to the top of the steam generator. Thread the nut finger tight, then tighten using a 3/8 inch wrench. **DO NOT OVERTIGHTEN.**
6. Connect the white wire (12) to the terminal on the lower half of the steam generator using the retained screw with lockwasher. If the terminal appears blackened, clean it using fine grit sandpaper.
7. Route the black thermal fuse wire (4) from the fuse assembly and connect it to Controller Board (2) terminal J1-3. Reapply cable ties.
8. Carefully bend and route the new steam generator thermocouple (8) along-side the chamber thermocouple lead to the Controller Board. The leads must not touch the cover when the cover is assembled to the chassis.
10. **EXERCISE EXTRA CAUTION, THE THERMOCOUPLE LEADS AT THE BOARD END ARE VERY FRAGILE.**
Carefully remove the protective sleeve from the end of the uninsulated chamber thermocouple leads and reconnect the flag terminal (3) to threaded lug marked BOILER on the Controller Board.
Each lead is colour coded: the yellow lead is positive, +Y.
the red lead is negative, -R.
Connect the yellow lead to the terminal marked +Y on the Controller Board. Connect the red lead to the terminal marked -R on the Controller Board. Make sure there is extra lead length so that the wires do not

break as the screw is tightened. Ensure the wires are seated securely behind the respective washers (see Figure 2).

! THE RED AND YELLOW LEADS MUST NOT TOUCH ONE ANOTHER NOR MAY THEY TOUCH ANY OTHER COMPONENT.

DO NOT CALIBRATE A THERMOCOUPLE UNTIL IT IS PROPERLY INSTALLED AND POSITIONED IN THE UNIT.

- 
11. Bundle the chamber thermocouple lead (7), steam generator thermocouple lead (8), microswitch leads (9), reservoir sensor leads (10) and the transducer leads (25), if present, to the armature (11) using cable ties (6) and the cable anchors provided.
 12. Carefully push the compressor tube (14) onto the check valve inlet (15) and secure the tube to the valve using a high temperature application cable tie (13).
 13. Calibrate the steam generator thermocouple. See, *Thermocouple Calibration*.
 14. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) MUST be performed on the STATIM L / 5000/5000i unit. See *Required Information, Tools and Routine Maintenance*.
 15. Run a sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-outs for messages indicating cycle status.
 16. Reinstall the cover. See *STATIM L / 5000 Cover Removal and Replacement*.



The Steam Generator Check Valve

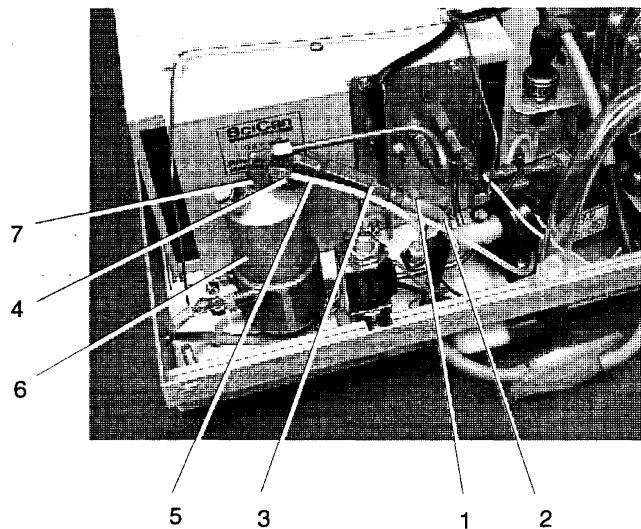
CAUTION: THE STEAM GENERATOR AND CHECK VALVE MAY BE HOT. GUARD AGAINST BURNS.

To inspect the check valve, turn ON the compressor using the Control Box, and allow the unit to run for a few minutes. See, *Required Information and Tools, the Control Box*. Allow the unit to cool to the touch. Remove and inspect the air filter, the bacteria-retentive filter (if present) and the compressor. See, *Compressor Removal and Installation*. If there is evidence of water in the bacteria retentive filter, replace the steam generator check valve and the filter. If there is evidence of water in the compressor or if the compressor filter is wet, replace the steam generator check valve, compressor and filters. See, *Air Filter Removal and Replacement*. See, *Bacteria Retentive Filter Removal and Replacement*.

To remove the steam generator check valve, follow these steps (see Figure 2)

1. Turn the power switch OFF, and unplug the unit.

2. Carefully cut the cable tie (1) holding the compressor tube (2) onto the check valve (3) inlet and pull the tube off the valve.
3. Using a 3/8 inch wrench, disconnect the compression nut (4) holding the white Teflon™ tube (5) to the inlet fitting on top of the steam generator.
4. Using a 9/16 inch wrench, remove the check valve (3). Apply the wrench to the part of the valve closest to the right angle brass fitting (7) in the steam generator. Be careful not to damage the threads of the inlet fitting on top of the steam generator. Clean any Teflon™ pipe fitting tape from the threads in the right angle valve fitting.
5. Prepare the right angle fitting by wrapping the threads with Teflon™ pipe fitting tape (minimum one complete wrap).
6. Thread the new valve onto the right angle valve fitting in the top of the steam generator. Using a 9/16 inch wrench on the end of the valve closest to the fitting, tighten the valve SNUG. DO NOT OVERTIGHTEN THE NEW VALVE.
7. Carefully push the compressor tube (2) onto the check valve (3) and secure the tube to the valve using a high temperature application cable tie (1).



- | | |
|-------------------------------------|------------------------------|
| 1. high temperature rated cable tie | 5. white Teflon™ tube |
| 2. compressor tube | 6. steam generator |
| 3. check valve | 7. right angle brass fitting |
| 4. compression nut | |

Figure 2

8. Connect the compression nut (4) holding the white Teflon™ tube (5) to the top of the steam generator. Thread the nut finger tight, then tighten using a 3/8 inch wrench.
9. Install replacement filters as required.
10. Reinstall the cover. See *STATIM L / 5000/5000S Cover Removal and Replacement*.

Document Change Record

Document Number: 96-103920		Title: Steam Generator	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	97.12.02	Line art changed to photos. Text changed to include addition of, "transducer, if present".	98-0290
3.0	99.04.14	Added 5000S	99-0059

Steam Generator Thermal Fuse

Removing the Thermal Fuse

To remove the thermal fuse located between the steam generator and the steam generator bracket, follow these steps (see Figures 1 and 2)

1. Carefully cut the high temperature rated cable tie (1) holding the compressor tube (2) onto the check valve inlet (3) and pull the tube off the valve.
2. Disconnect the black thermal fuse lead wire (4) from Controller Boa connector terminal J1-3 and the white wire (6) from the steam generator.
3. Trace the path of the black wire back to the base of the steam generator (5). Cut all the cable ties holding the black wire.
4. Using a 3/8 inch wrench, disconnect the compression nut (7) holding the Teflon™ tube (8) from the top of the steam generator.
5. Using a 7/16 inch wrench, disconnect the compression nut (9) holding the steam generator outlet tube (10) to the probe bracket inlet fitting (11) the compression (12) nut holding the steam generator outlet tube to the steam generator outlet fitting (13).
6. Remove the two screws (14) from the steam generator bracket (15). The steam generator is still attached to the PCB by the thermocouple lead (16).
7. Carefully cut the two cable ties closest to the steam generator that hold the thermocouple leads together.
8. Gently lift and turn the steam generator assembly onto one side to expose the bottom of the assembly. **BE CAREFUL NOT TO STRESS THERMOCOUPLE LEADS. (MIN. BEND RADIUS - 3/16 INCH / 5MM)**
9. Remove the small screw (17) which attaches the steam generator bracket to the steam generator.
10. Disconnect the thermal fuse (18) from the lower power terminal on the steam generator. Note the routing of the thermal fuse assembly between the bracket and spacing standoffs (20) on the bottom of the steam generator.



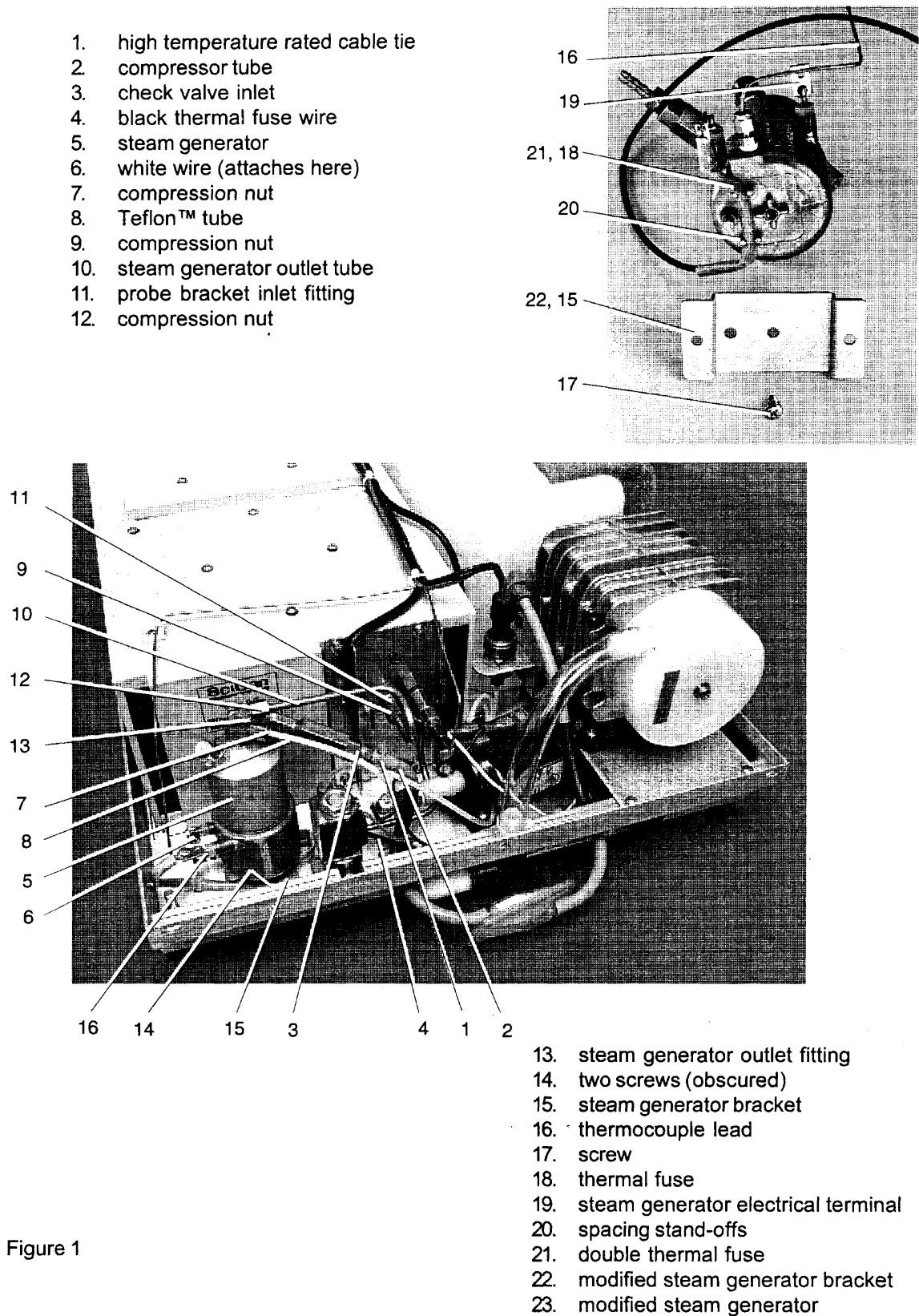


Figure 1

Replacing the Thermal Fuse

There are three thermal fuse configurations you may encounter while servicing a STATIM L / 5000/5000S unit:

Type A is a single thermal fuse wire (18), steam generator bracket (15) and an unmodified steam generator (5).

Type B is a double thermal fuse wire (21) with a modified steam generator bracket (22) and an unmodified steam generator (5).

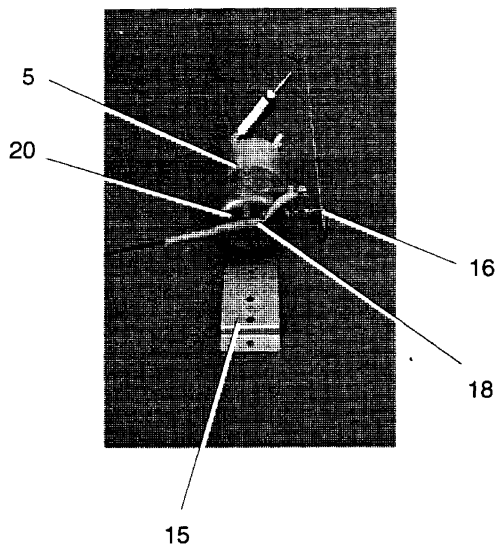
Type C is a double thermal fuse wire (21), steam generator bracket (15) and a modified steam generator (23).

Determine which configuration is being serviced and use the appropriate procedure to service the unit.

To replace the thermal fuse follow these steps (see Figures 1 and 2):

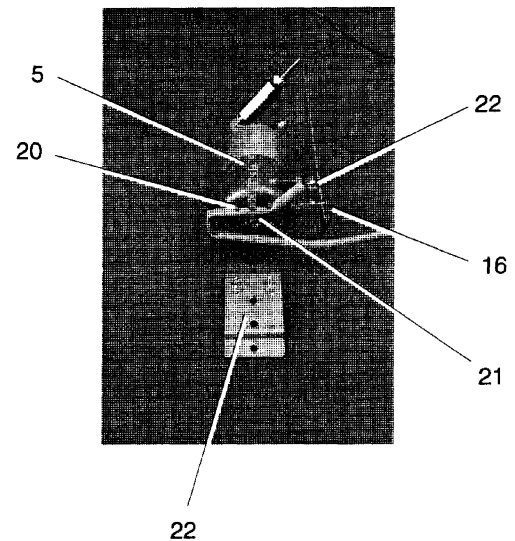
1. Connect the thermal fuse terminal (18) or (21) to the lower power terminal on the steam generator (19).
- 2.A For Type A configurations, replace the steam generator bracket (15) with a modified steam generator bracket (22). Route the wire from the fuse assembly (21) between the standoffs (20) and the standoffs on the modified steam generator bracket (22) as shown in Figure 2. The fuse must be placed exactly between the standoffs. Attach the steam generator bracket to the steam generator (5) using the small screw (17). **DO NOT PINCH OR CRUSH THE WIRE BETWEEN COMPONENTS.** Ensure that the screw is tightened securely.
- 2B. For Type B configurations, route the wire from the fuse assembly (21) between the standoffs (20) on the bottom of the steam generator (5) and the standoffs on the modified steam generator bracket (22) as shown in Figure 2. The fuse must be placed exactly between the standoffs. Attach the steam generator bracket to the steam generator (5) using the small screw (17). **DO NOT PINCH OR CRUSH THE WIRE BETWEEN COMPONENTS.** Ensure that the screw is tightened securely.
- 2C. For Type C configurations, route the wire from the fuse assembly (21) between the two sets of standoffs (20) on the bottom of the modified steam generator (23), as shown in Figure 3. The fuse must be placed exactly between the standoffs. Attach the steam generator bracket to the steam generator using the small screw (17). **DO NOT PINCH OR CRUSH THE WIRE BETWEEN COMPONENTS.** Ensure that the screw is tightened securely.
3. Carefully return and attach the steam generator assembly to the chassis using two screws (14). Start the screws into the tapped hole but do not tighten the screws. **BE CAREFUL NOT TO STRESS THE THERMAL COUPLE LEADS.** (MIN. BEND RADIUS - 3/16 INCH / 5MM).
4. Connect the compression nut (12) holding the steam generator outlet tube (10) to the steam generator outlet fitting (13) and the compression nut (9) holding the steam generator outlet tube (10) to the steam generator bracket inlet fitting (11). Tighten finger tight.

TYPE A



- 5. steam generator
- 15. steam generator bracket
- 16. thermocouple lead
- 17. screw (not shown)
- 18. thermal fuse

TYPE B



- 19. steam generator electrical terminal
- 20. spacing stand-offs
- 21. double thermal fuse
- 22. modified steam generator bracket
- 23. modified steam generator

TYPE C

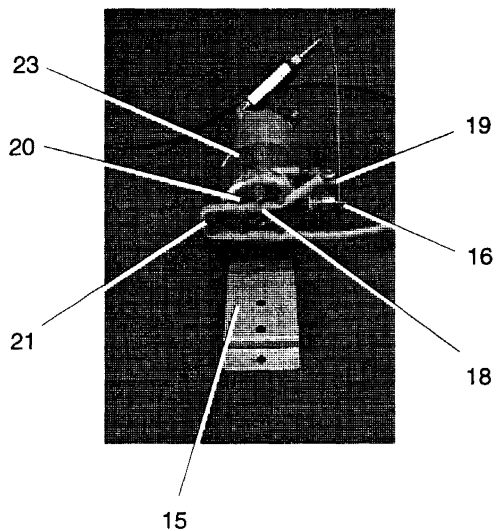


Figure 2

5. Connect the compression nut (7) holding the Teflon™ pump tube (8) to the top of the steam generator. Tighten finger tight, then continue to tighten the nut using a 3/8 inch wrench. DO NOT OVERTIGHTEN.
6. Tighten the two screws (14) that attach the steam generator assembly to the chassis.
7. Using a 7/16 wrench, tighten the compression nut holding the steam generator outlet tube to the steam generator outlet fitting and the compression nut holding the steam generator outlet tube to the probe bracket fitting also.
8. Route the black wire (4) from the fuse assembly and connect the to Controller Board connector J1-3. Connect the white wire (6) to the steam generator electrical terminal (19).
9. Bundle the loose wires together, using nylon cable ties every 2-3 inches.
10. Remember to reinstall the compressor tube (2) onto the check valve (3) and secure the tube to the valve with a high temperature rated cable tie (1).
11. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STATIM L / 5000 unit. See, *Required Information, Tools and Routine Maintenance*.
12. Run any sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-outs for messages indicating cycle status.



NOTE: THE STEAM GENERATOR FUSE WILL FAIL WHEN THE STEAM GENERATOR OVERHEATS DUE TO STATIC FORCING THE STEAM GENERATOR ON OR IF THERE IS NOT ENOUGH WATER. THE MAIN CAUSE OF MOST BOILER OVERHEATS IS A FOULED PUMP. BE SURE TO CHECK AND CLEAN THE PUMP FILTERS ANY TIME YOU SERVICE THE STEAM GENERATOR THERMAL FUSE! SEE THE PUMPS SECTION OF THE MANUAL FOR THE FILTER CLEANING PROCEDURE.

Document Change Record

Document Number: 96-103916		Title: Steam Generator Thermal Fuse	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	97.11.21	Revised, line art replaced by photos. Text changed to reflect variations of fuse assembly and steam generator construction.	98-0290
3.0	99.04.14	Added 5000S	99-0059

Probe Bracket and Chamber Thermocouple

Removing the Probe Bracket

To remove the probe bracket assembly located behind the steam generator on the rear of the armature, follow these steps (see Figure 1):

1. Loosen the screws and disconnect the two fine wires (1) from Controller Board (2) terminal positions CHAMBER +Y and -R. Disconnect flag terminal (3) from the position marked CHAMBER directly above terminals. Leave the screws with contact washers in the terminals.
2. Remove the microswitch (4) leads from Controller Board block connector positions labelled CASSIN.
3. Carefully cut the cable ties (5) securing the steam generator the couple lead (6), the chamber thermocouple lead (7), the microswitch leads and the reservoir sensor leads (8).
4. Carefully cut the cable tie (9) holding the compressor tube (10) onto check valve inlet (11) and pull the tube off the valve.
5. Using a 7/16 inch wrench, disconnect the compression nut (12) holding the steam generator outlet tube (13) to the steam generator outlet fitting (14).
6. Remove the two screws (15) holding the steam generator bracket to the chassis.
7. Using a 7/16 inch wrench, disconnect the compression nut (17) holding the solenoid valve exhaust tube (18) to the outlet probe fitting (19).
8. Remove the two screws (20) that attach the solenoid valve / bracket assembly (21) to the chassis.
9. The probe bracket assembly (22) is held by four hex socket cap screws with flat washers (23). The bottom of the probe bracket assembly has two mounting slots. The top of the bracket has two mounting holes. Remove the top two screws using a 9/64 inch ball end Allen key. Loosen the bottom cap screws to allow the bracket to slide up and off of the chassis. Note the foam probe bracket gasket (24 - not shown) mounted on the armature.
10. Remove the steam generator outlet tube (13) and the solenoid valve exhaust tube (18) from the probe bracket assembly and discard them.

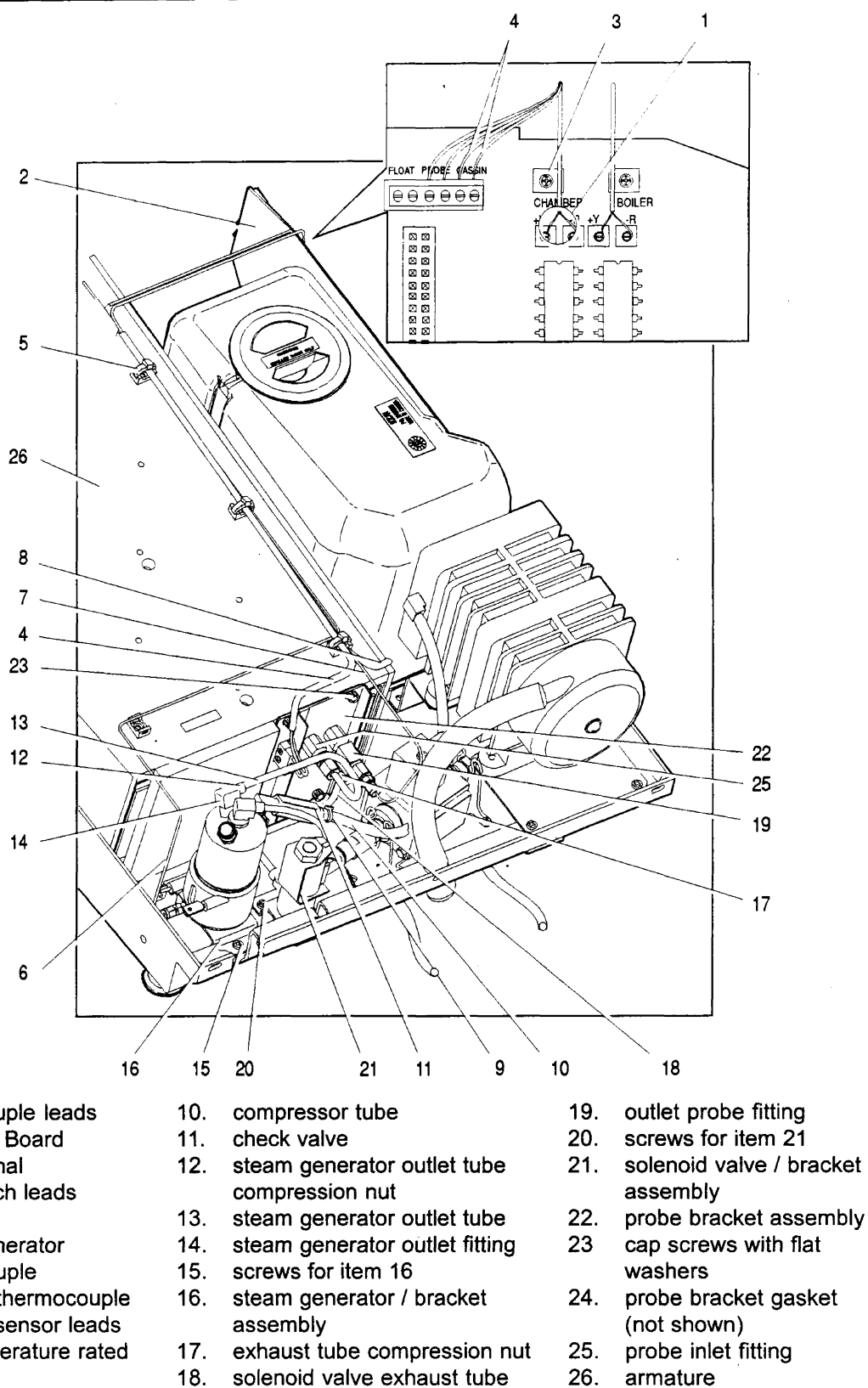


Figure 1

Replacing the Probe Bracket Assembly

To replace the probe bracket assembly located behind the steam generator on the rear of the armature, follow these steps (see Figure 1):

1. Inspect the probe bracket gasket (24) (not shown) on the back of the armature (26) for wear or adhesive failure. If required, remove the damaged gasket and replace it with a new one. **THE GASKET MUST BE PRESENT.**
2. Inspect the exposed portion of the thermocouple that projects from the outlet probe. Note the position of the thermocouple and the orientation of the end of the thermocouple. **DO NOT ADJUST THE POSITION OF THE TIP OF THE THERMOCOUPLE. THE TIP IS PRE-BENT DURING MANUFACTURING TO EXACT SPECIFICATIONS.** See Figure 2.
3. Verify that the microswitch functions properly. See, *Replacing the Microswitch*.
4. Tilt the top of the probe bracket assembly (22) away from the armature and carefully insert the bracket onto the bottom two cap screws with flatwashers (23) on the back of the armature. The washers rest on the outside of the probe bracket assembly. Ensure that the thermocouple leads do not come in contact with the outside of the armature or probe gasket.
BE CAREFUL NOT TO BEND THE THERMOCOUPLE LEADS TOO SHARPLY. RETAIN THE PROTECTIVE SLEEVE ON THE END OF THE THERMOCOUPLE LEADS AS LONG AS POSSIBLE
5. Insert two cap screws with flat washers (23) into the upper mounting holes of the probe bracket. Tighten all four cap screws so that the bracket is held in place, but can still be adjusted up, down and sideways.
6. Replace the copper tube (13) that extends between the steam generator outlet fitting (14) and the probe inlet fitting (25) on the probe bracket assembly (22). Do not tighten the compression nut until the steam generator assembly is reinstalled in the chassis.
7. Replace the copper tube (18) that extends between the solenoid valve bracket assembly (21) and the outlet probe fitting (19) on the probe bracket assembly (22). Do not tighten the compression nuts.
8. Secure the steam generator / bracket assembly (16) using the two screws (15) previously removed. Do not tighten these screws.
9. Tighten the compression nut (12) to the steam generator outlet fitting (14), and the compression nut (17) to the probe inlet fitting (25) using a 7/16 inch wrench.
10. Reinstall the solenoid valve bracket assembly (21) using the two

screws (20) previously removed. Do not tighten these screws.

11. Tighten the compression nut to the solenoid valve / bracket assembly fitting (21), and the compression nut to the outlet probe fitting (19), using a 7/16 inch wrench.
12. Push the rubber tube (10) extending from the compressor onto the checkvalve fitting (11) on the steam generator. Secure the tube to the fitting using a high temperature rated cable tie (9).
13. Carefully route the chamber thermocouple leads (7), the microswitch leads (4) and the reservoir sensor leads (8) beside the steam generator thermocouple (6), along the top of the armature.
14. Carefully remove the protective sleeve from the end of the uninsulated chamber thermocouple leads. Pre-bend both leads to achieve the required shape. Reconnect the flag terminal to the threaded lug marked CHAMBER on the Controller Board. **EXERCISE CAUTION, THE THERMOCOUPLE LEADS AT THE BOARD END ARE VERY FRAGILE.**
Each lead is colour coded: the yellow lead is positive, +Y.
the red lead is negative, -R.
Connect the yellow lead to the terminal marked +Y on the Controller Board. Connect the red lead to the terminal marked -R on the Controller Board. Make sure there is extra lead length so that the wires do not break as the screw is tightened. Ensure the wires are seated securely behind the respective washers (see Figure 1).
THE RED AND YELLOW LEADS MUST NOT TOUCH ONE OTHER NOR MAY THEY TOUCH ANY OTHER COMPONENT.
DO NOT CALIBRATE A THERMOCOUPLE UNTIL IT IS PROPERLY INSTALLED AND POSITIONED IN THE UNIT.
15. Connect the microswitch leads (4) to Controller Board (2) block terminal positions labelled CASSIN.
16. Bundle the thermocouple leads, microswitch and reservoir sensor leads together using nylon cable ties, approximately every 2-3 inches. Use a cable tie to secure the microswitch leads and reservoir sensor leads to the side of the probe bracket assembly **AFTER** the probe bracket has been aligned.

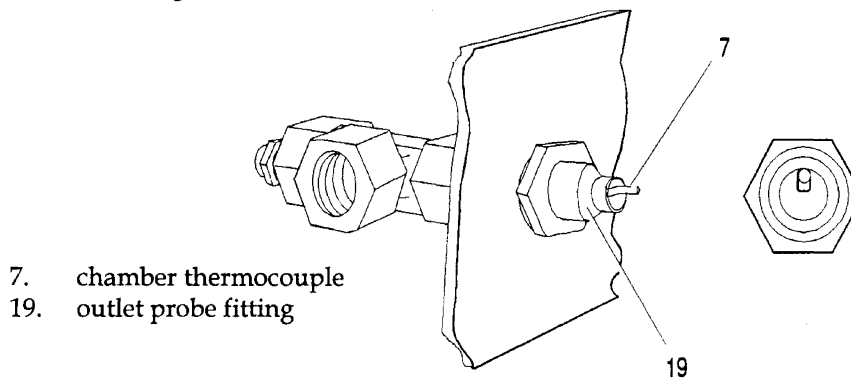


Figure 2

17. Align the probe bracket. See, *Aligning the Probe Bracket Assembly*.
18. Calibrate the chamber and steam generator thermocouples. See *Thermocouple Calibration*.
19. Reinstall the cover. See, *STATIM L / 5000/5000S Product Removal and Replacement*.

Aligning the Probe Bracket Assembly

To align the probe bracket assembly, follow these steps (see Figure 1):

1. Be sure that the four cap screws with flat washers are loosened to allow adjustment of the probe bracket.
2. Insert either a regular cassette or a calibration cassette into the armature until it just touches the probe tips. Gently press the cassette towards the probe bracket. At the same time, adjust the probe bracket until the probe tips enter the openings in the cassette lid.



PERFORM THIS OPERATION WITH CARE. DO NOT BEND THE TIPS OF THE CHAMBER THERMOCOUPLE. The thermocouple end is pre-bent during manufacturing to exact specifications.

3. Slowly push the cassette until fully inserted position while continuing to adjust the probe bracket so as to centre the probes in the cassette openings.
4. Withdraw the cassette and repeat steps 2 and 3 as often as required to centre the probes correctly in the openings.
5. Plug in the power cord and turn the power switch ON. Start an UNWRAPPED cycle and watch the LCD until the CONDITIONING phase of the cycle is displayed. Turn the power switch OFF.

Tighten the four cap screws with flat washers using the 9/64 inch hex end Allen key. Follow the tightening pattern, starting with the upper hand corner of the bracket. Then tighten the bottom right hand corner, the upper right hand corner and finally the bottom left hand corner.

6. Check that all fittings have been tightened. Check for leaks. Make sure that all brackets are secured to the chassis.
7. Reinstall the cover. See, *STATIM L / 5000/5000S Product Removal and Replacement*.

Document Change Record

Document Number: 96-103917		Title: Probe Bracket and Chamber Thermocouple	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-0059

Controller Board Removal and Replacement



HAZARDOUS VOLTAGES ARE ACCESSIBLE ON THE CONTROLLER BOARD WHEN THE POWER IS ON. DISCONNECT THE POWER CABLE BEFORE SERVICING THE POWER MAINS PORTION OF THE BOILER.

STATIM L / 5000/5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

STATIM L / 5000/5000S units contain Type C Controller Boards. See Figure 1.

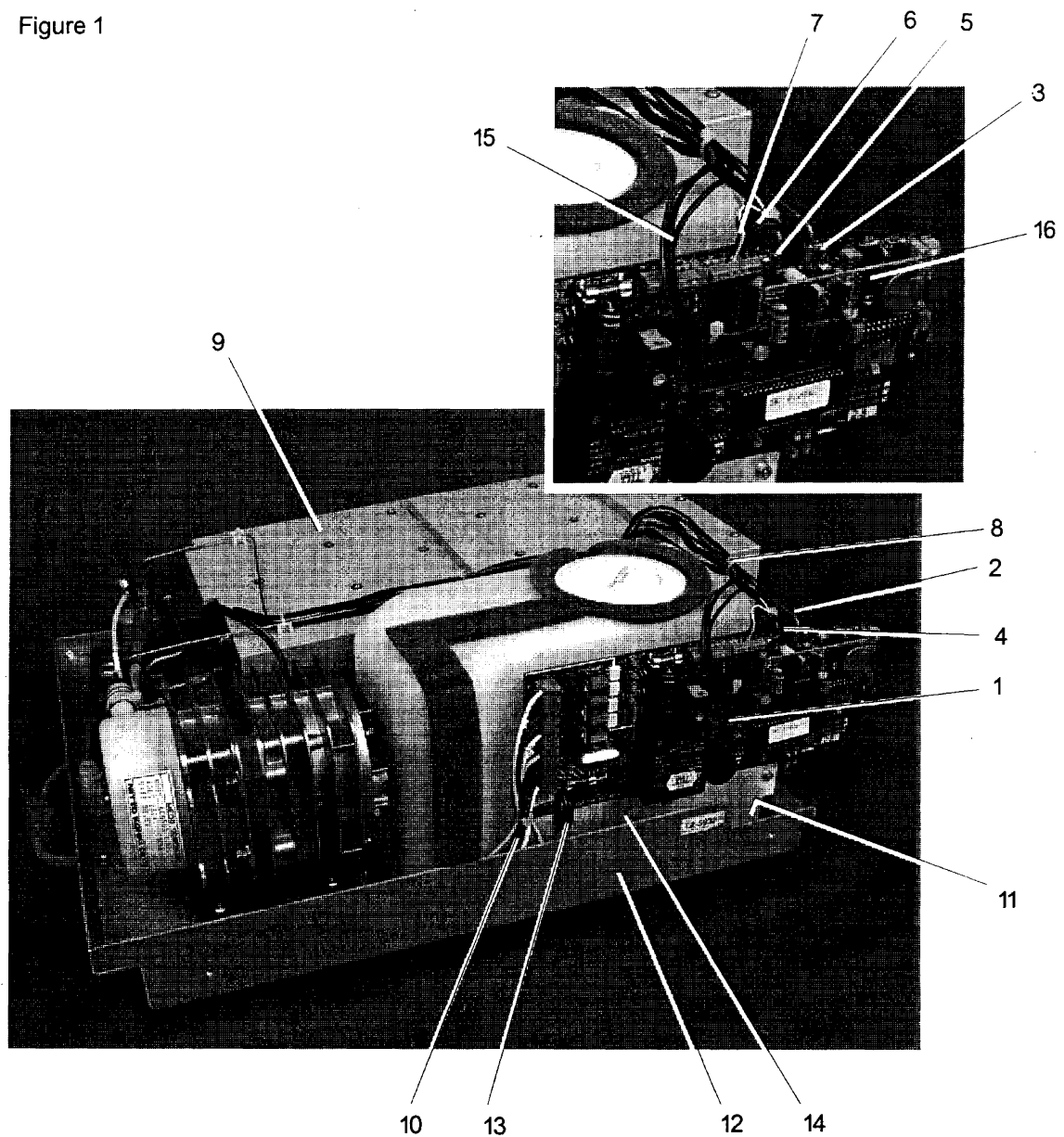
Removing the Controller Board Assembly

To remove the Controller Board Assembly (1), follow these steps (see Figure 1).

1. If present, disconnect the Transducer Board (16) from the Controller Board. See, *Pressure Transducer*.
2. EXERCISE EXTRA CAUTION, THE THERMOCOUPLE LEADS AT THE BOARD END ARE VERY FRAGILE. Disconnect the steam generator thermocouple wires (2) from Controller Board terminal positions BOILER +Y and -R. Disconnect the flag terminal (3) from the position marked BOILER directly above the terminals. Disconnect the chamber thermocouple wires (4) from Controller Board terminal positions CHAMBER +Y and -R. Disconnect the flag terminal from the position marked CHAMBER directly above the terminals. Retighten the flag terminal screws. Leave the screws with contact washers in place.
3. Remove the microswitch leads (6) from Controller Board header terminal positions labelled CASSIN.
4. Remove the water quality sensor leads (7) from Controller Board terminal positions labelled PROBE.
5. Disconnect all high voltage leads (10) from Controller Board block terminal J1.
6. Remove and retain the three screws with washers (11) that secure the Controller Board assembly to the chassis (12).



Figure 1



- | | |
|---------------------------------------|--|
| 1. Controller Board assembly | 9. armature |
| 2. steam generator thermocouple wires | 10. high voltage leads |
| 3. BOILER flag terminal | 11. screw with washer (3x - view obscured) |
| 4. chamber thermocouple wires | 12. chassis |
| 5. CHAMBER flag terminal | 13. triac |
| 6. microswitch leads | 14. Controller Board support bracket |
| 7. water quality sensor leads | 15. transducer leads (if present) |
| 8. cable ties | 16. Transducer Board (if present) |

!

To replace the Controller Board assembly, follow these steps (see Figures 1 and 2):

1

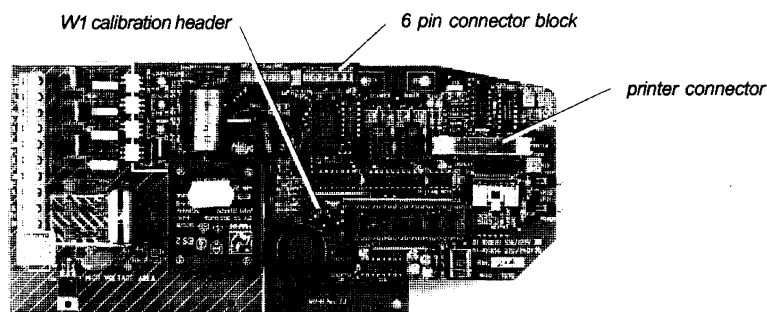
Connect the yellow lead to the terminal marked +Y on the Controller



Board. Connect the red lead to the terminal marked -R on the Controller Board. Make sure there is extra lead length so that the wires do not break as the screw is tightened. Ensure the wires are seated securely behind the respective washers (see Figure 2).

THE RED AND YELLOW LEADS MUST NOT TOUCH ONE ANOTHER NOR MAY THEY TOUCH ANY OTHER COMPONENT.

7. Bundle the microswitch leads (6), the water quality sensor leads (7), the transducer leads (if present) and the thermocouple leads together using cable ties every 2-3 inches.
8. The chamber and steam generator thermocouples MUST be recalibrated. DO NOT CALIBRATE A THERMOCOUPLE UNTIL IT IS PROPERLY INSTALLED AND POSITIONED IN THE UNIT.
See Calibrating STATIM L / 5000/5000S Thermocouples.
9. If present, reinstall the Transducer Board (16). See, *Pressure Transducer*.
10. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) MUST be performed on the STATIM L / 5000/5000S unit. See *Required Information and Tools*.
9. Reinstall the cover. See, *STATIM L / 5000/5000S Cover Removal and Replacement*.



Type C - with printer connector, 6 pin connector block labelled, FLOAT, PROBE, CASSIN and W1 calibration connector header

1. Controller Board assembly
2. triac
3. Controller Board support bracket
4. thermal compound
5. high voltage leads

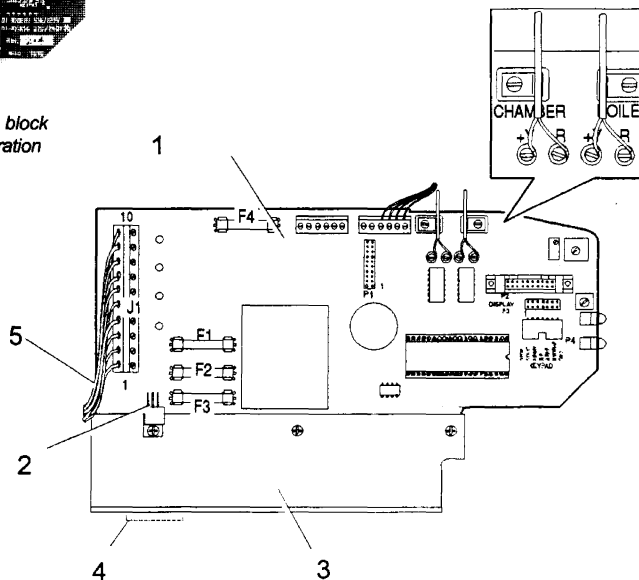


Figure 2

Controller Board Fuse Values (for Ver. 2.X boards)

220-240V Units

Fuse Number	Fuse Value	Fuse Size
F1	2A / 250V / FAST	5mm x 20mm
F2	6.3A / 250V / FAST	5mm x 20mm
F3	6.3A / 250V / FAST	5mm x 20mm
F4	0.25A / 250V / SLOW	5mm x 20mm

100 - 120V Units

Fuse Number	Fuse Value	Fuse Size
F1	2A / 250V / FAST	5mm x 20mm
F2	15A / 250V / FAST	0.25 x 1.25 inch
F3	15A / 250V / FAST	0.25 x 1.25 inch
F4	0.25A / 250V / SLOW	5mm x 20mm

Spare Part Kits:

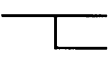
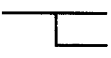
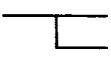
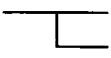
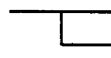
01-101778S - Fuses 220/240V, C - includes 2A (qty1), 6.3A (qty 1), 0.25A (qty 1)
 01-103472S - Fuses 110V (V 4.2 or later) B/C/D - includes 15A (qty 2)

Fuse Designations:

F1 - for high voltage side, protects rectifiers for valve, pump and compressor
 F2, F3 - for high voltage side, power in and boiler shorts, also terminal shorts
 F4 - for low voltage side, usually static on the low voltage side

Controller Board High Voltage J1 Connector - Chart A

See Figure 2.

Marking	Pin Number	Device	Signal	Wire Colour
COMP 	J1-10	COMPRESSOR	N	WHITE
	J1-9		L	BLACK
VALVE 	J1-8	SOLENOID VALVE	N	WHITE
	J1-7		L	WHITE
PUMP 	J1-6	PUMP	N	WHITE
	J1-5		L	BLACK
BLR 	J1-4	STEAM GENERATOR	N	WHITE
	J1-3		L	BLACK
INPUT 	J1-2	POWER SWITCH	L	BLACK
	J1-1		N	WHITE

Document Change Record

Document Number: 96-103922		Title: Controller Board	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	97.12.09	Line art replaced with photos. Text changed to reflect possible presence of pressure transducer hardware.	98-0290
3.0	99.04.14	Added 5000S	99-0059

Controller Board Schematics and Reference Draw



STAT/ML / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

There are several Controller Board assembly numbers and revisions that may be encountered while servicing STAT/ML / 5000/ 5000S units. Verify the assembly number on the front bottom corner (component side) of Controller Board and refer to the appropriate schematic / reference drawing in this manual.



THERMOCOUPLES MUST BE CALIBRATED AFTER SERVICING THE CONTROLLER BOARD.

For further information regarding the Controller Board and associated software see, *Controller Board Removal and Replacement* and *Microprocessor Removal and Replacement*.

1 2 3 4 5 6

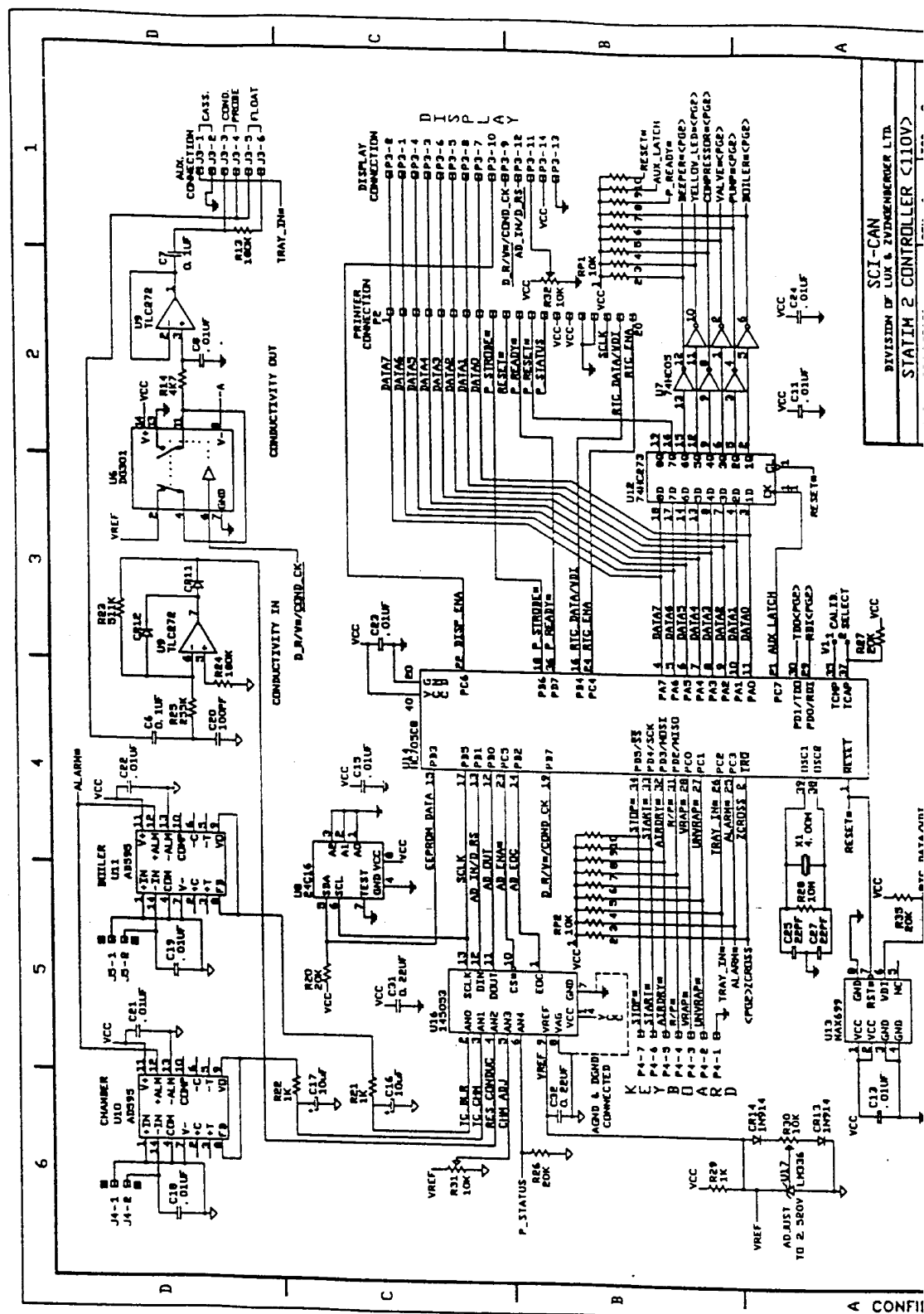
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STATIM 2 CONTROLLER C110V
REV. 1 ISS. 0
DATE, DEC. 14, 1993 SHEET 1 OF 2

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STATIM 2 CONTROLLER <110V>

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STATIM 2 CONTROLLER <110V>

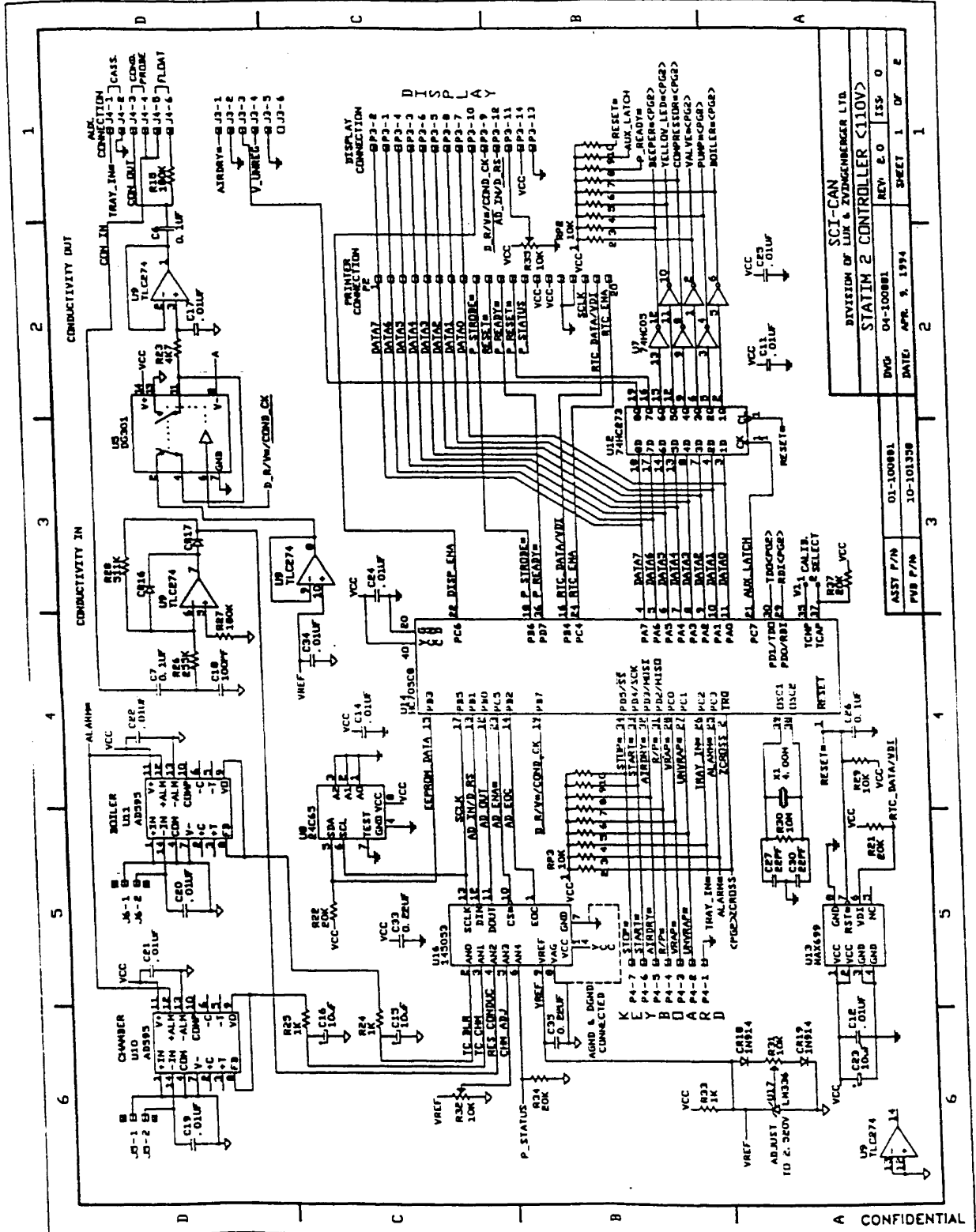
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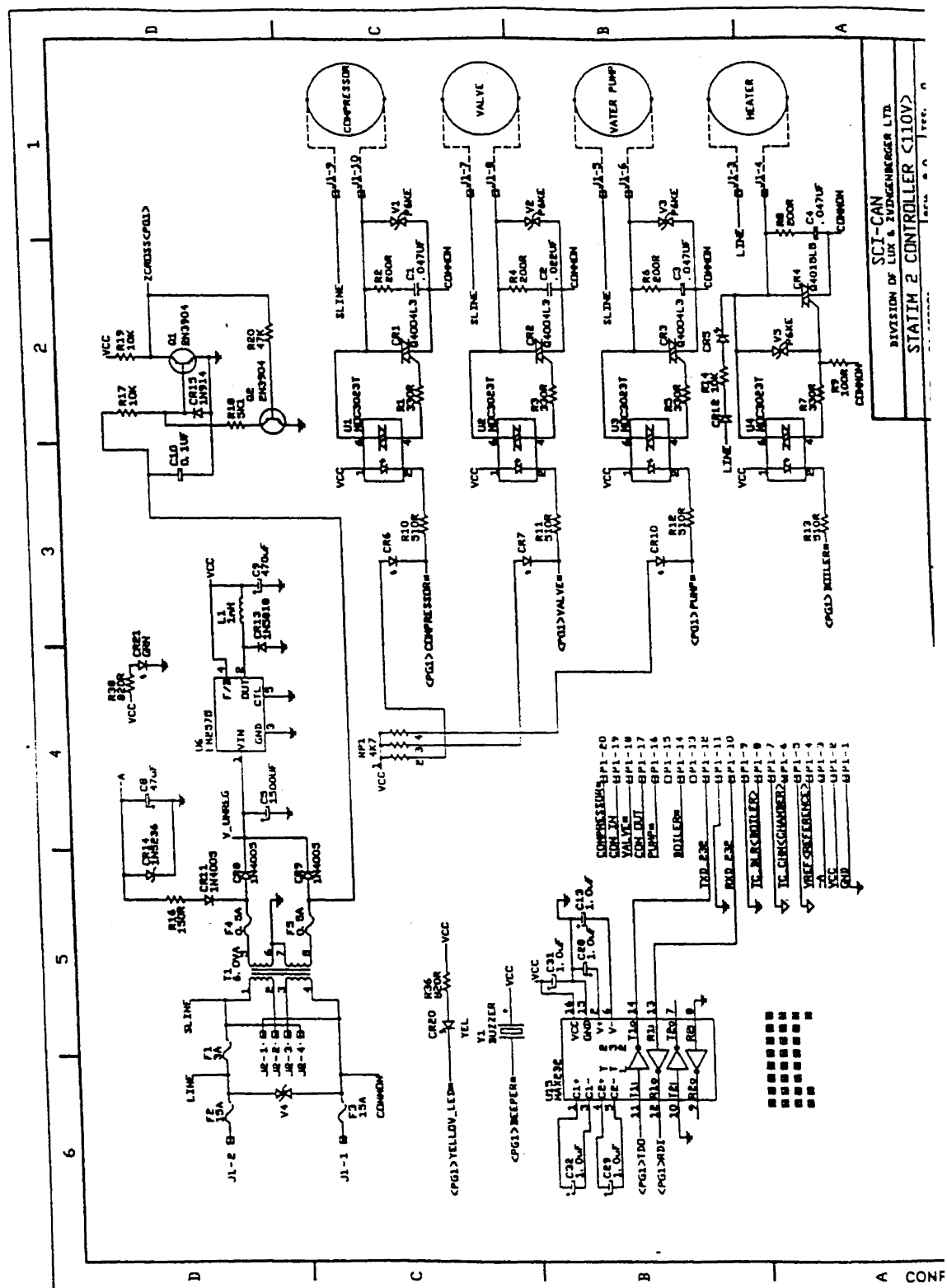
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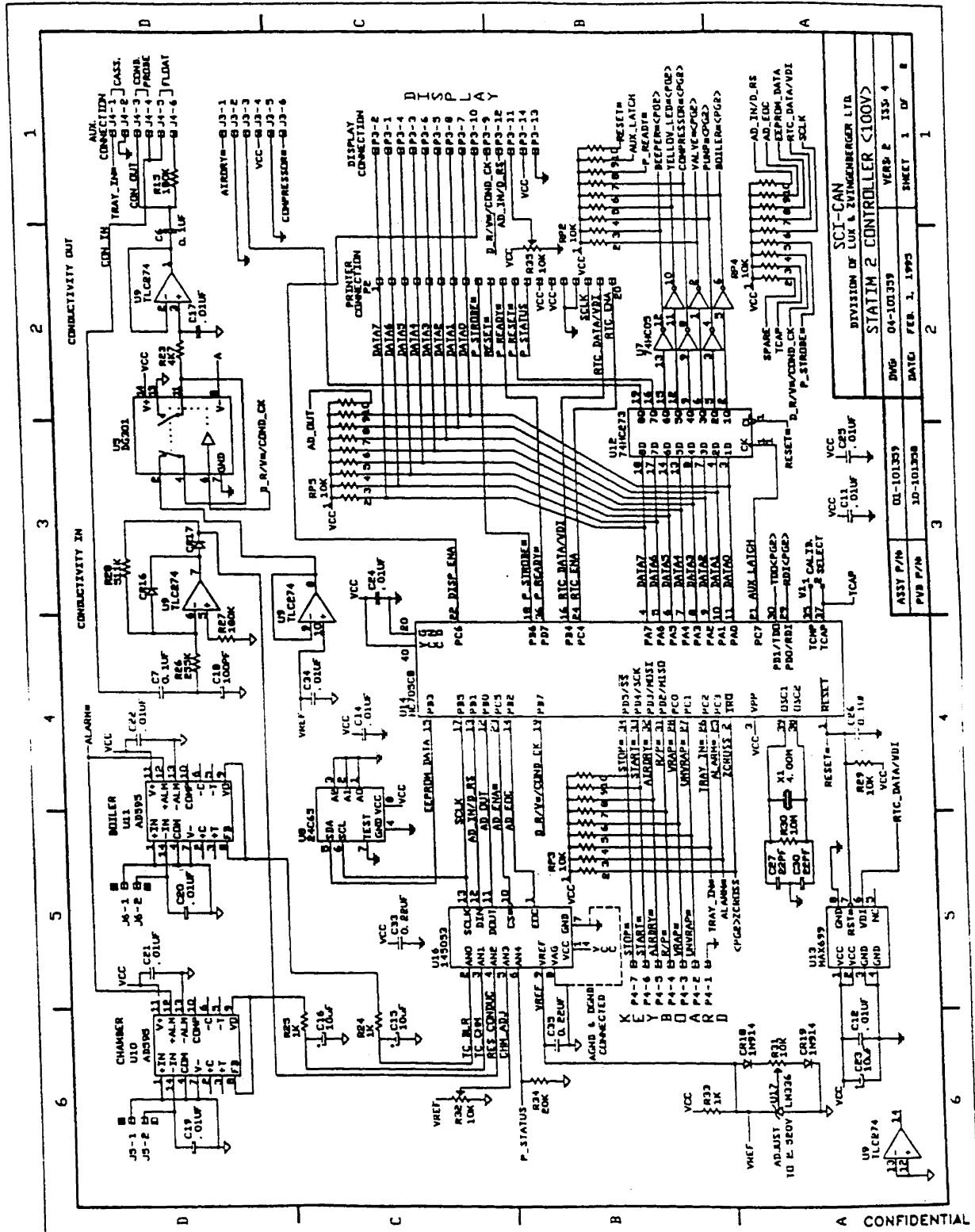
STATIML / 5000/ 5000S Cassette Autoclave Servi

Revision 2.0 PCB:

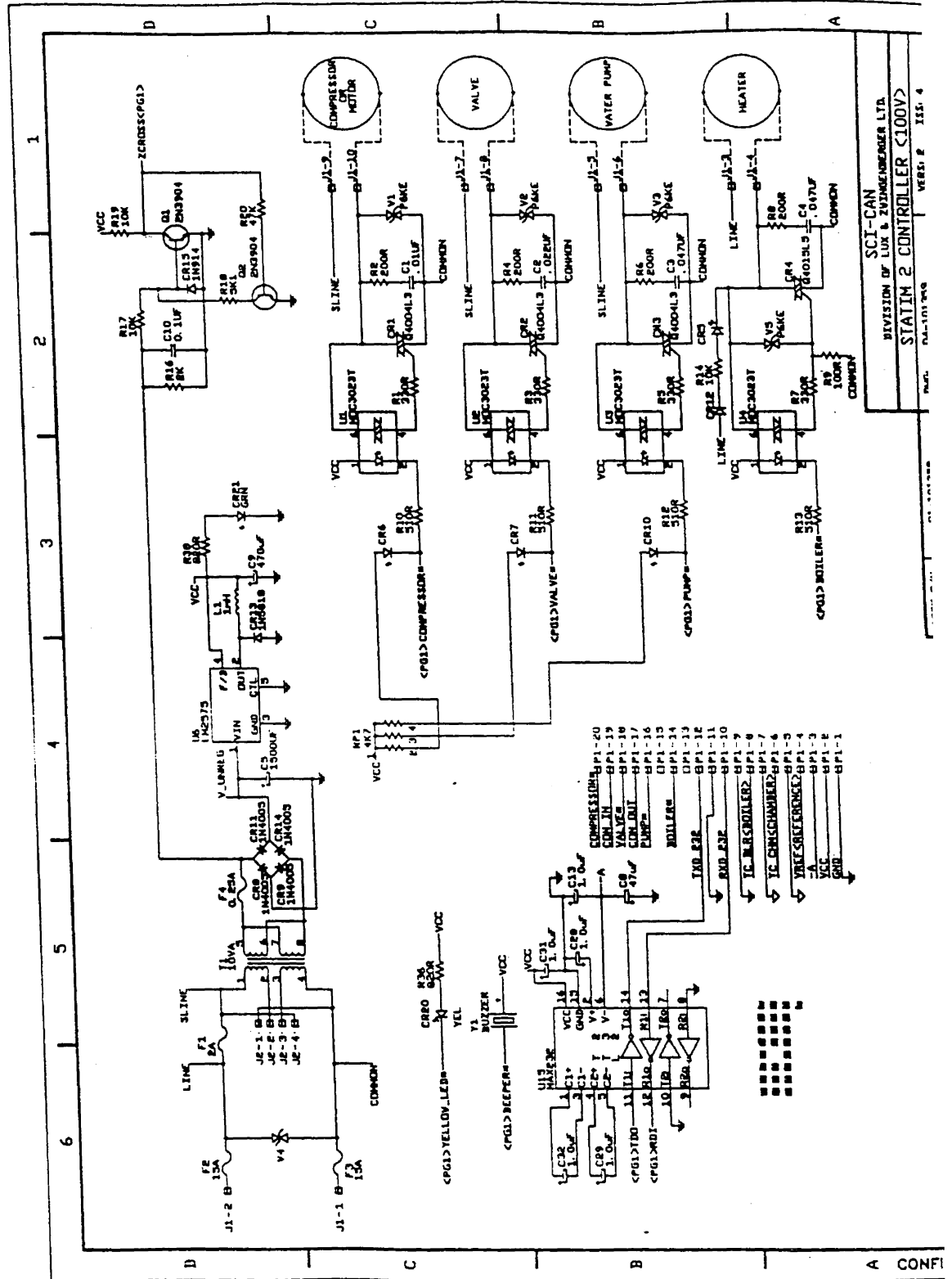




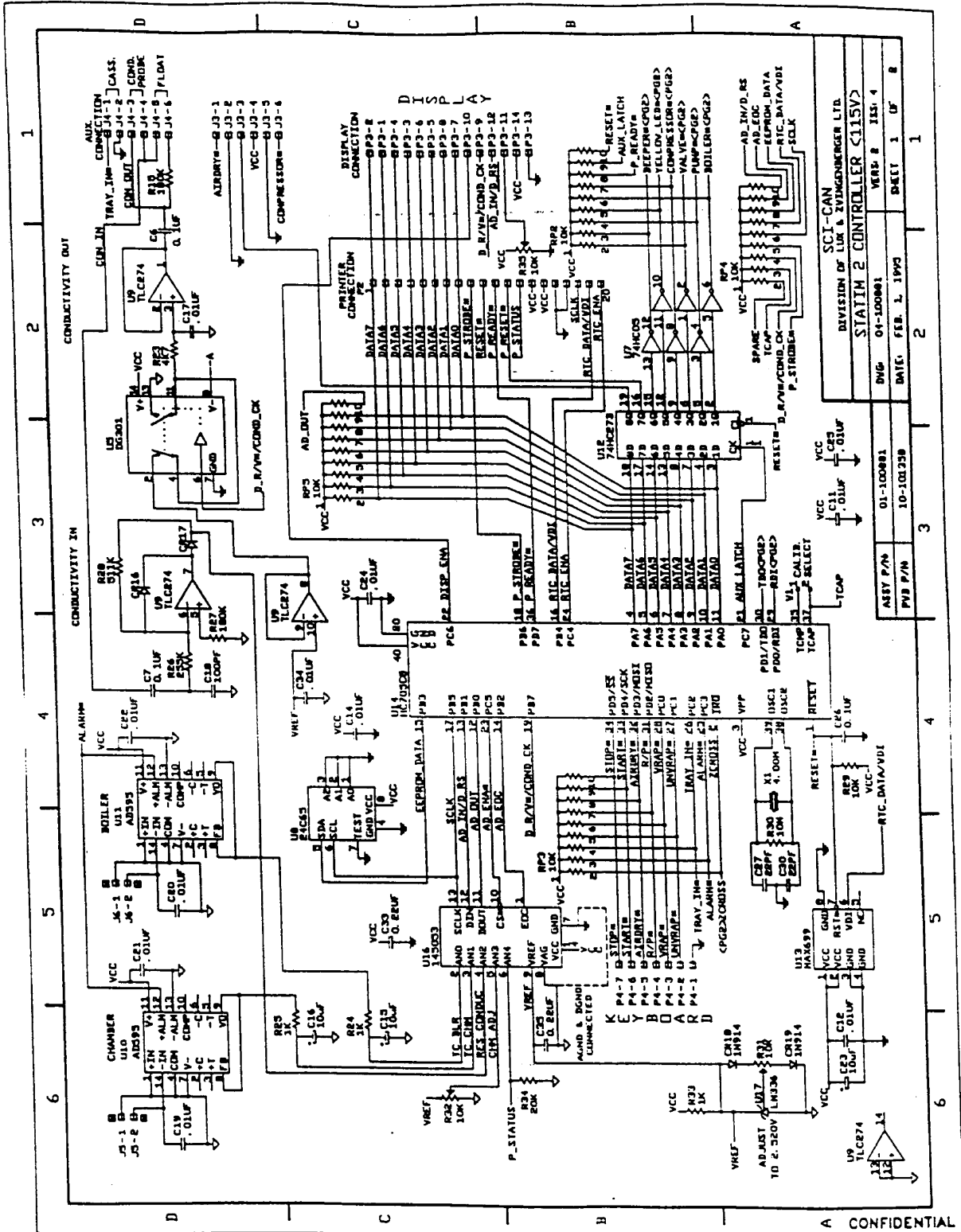
Revision 2.4 PCB:



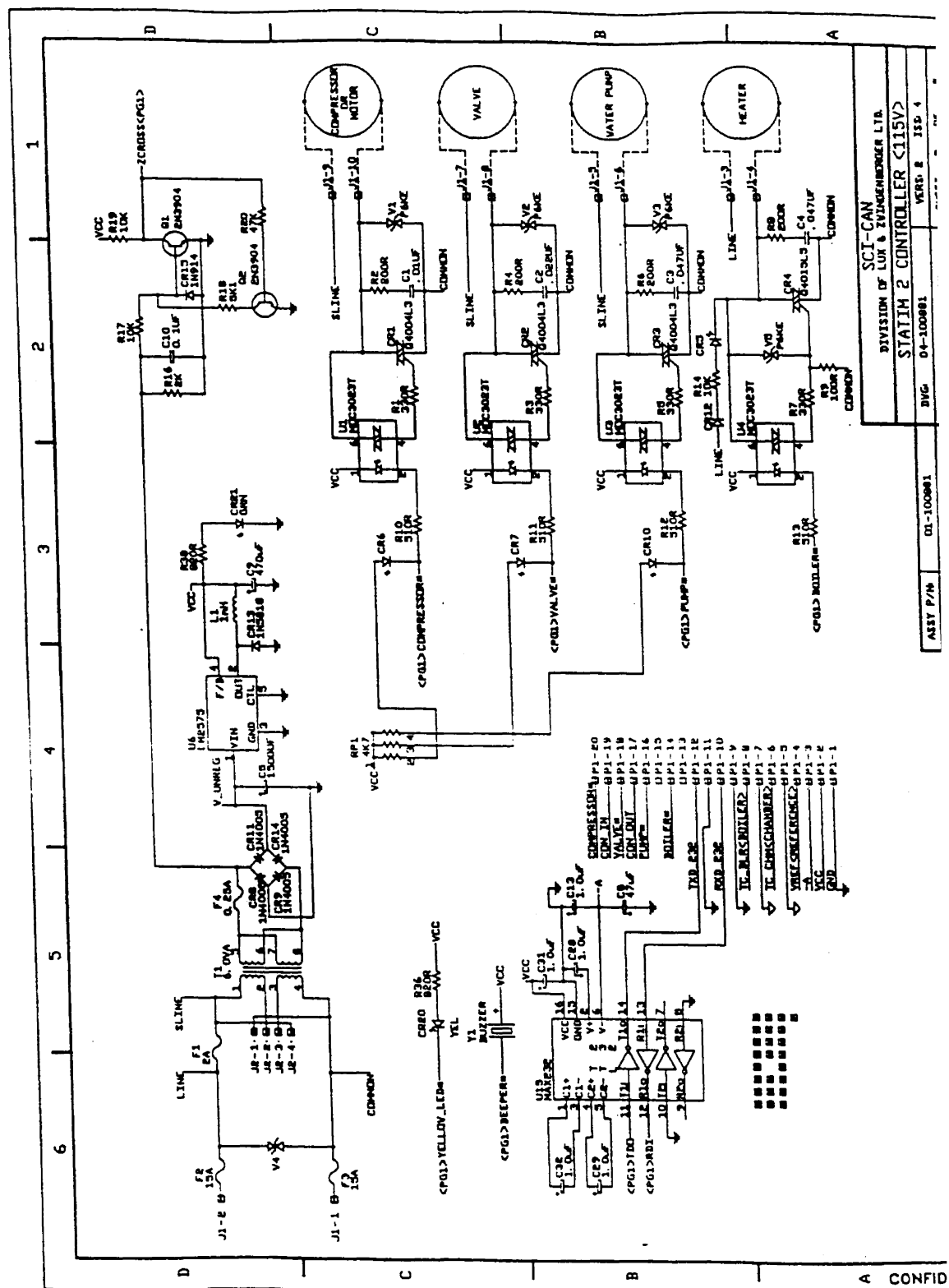
CONFIDENTIAL

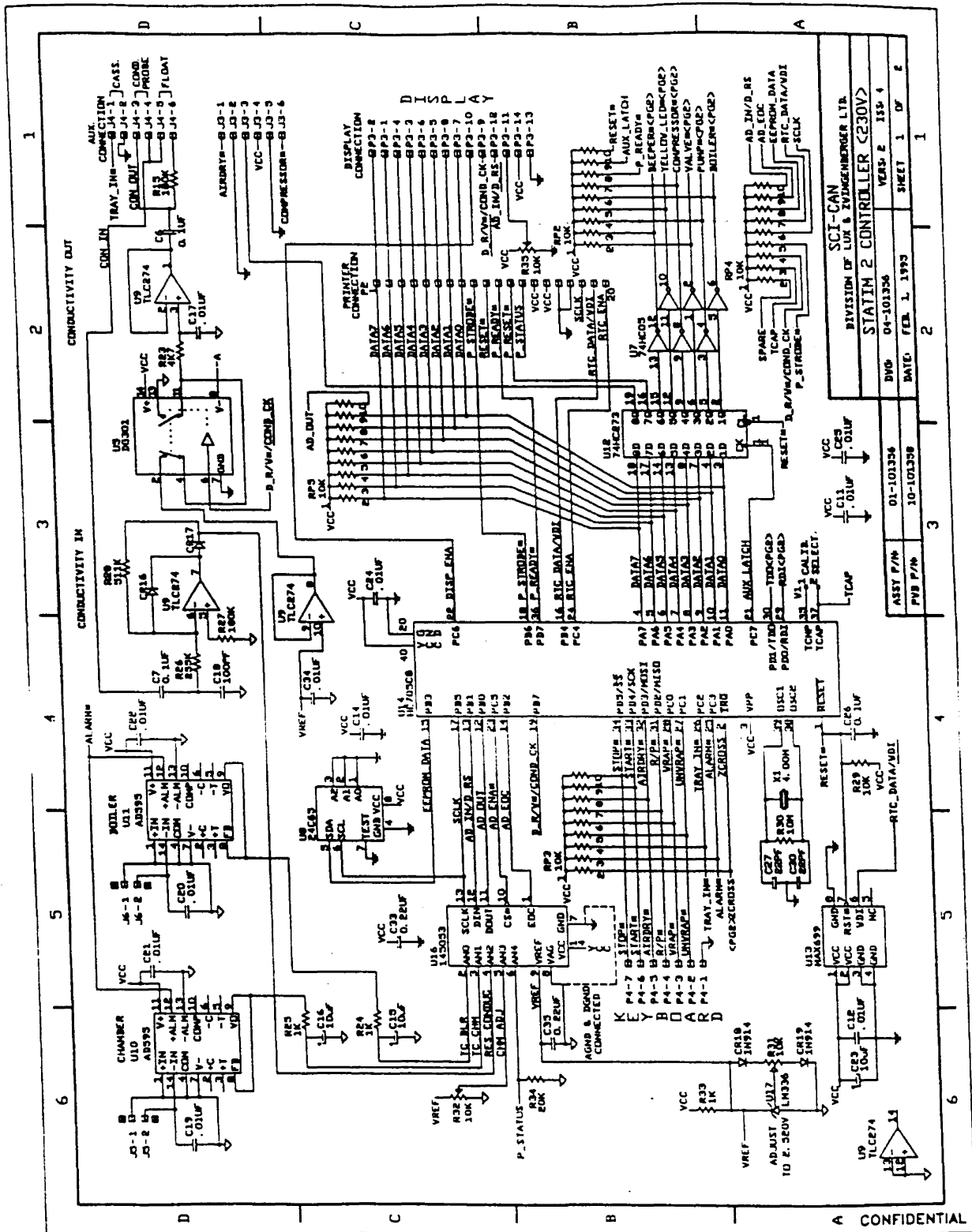


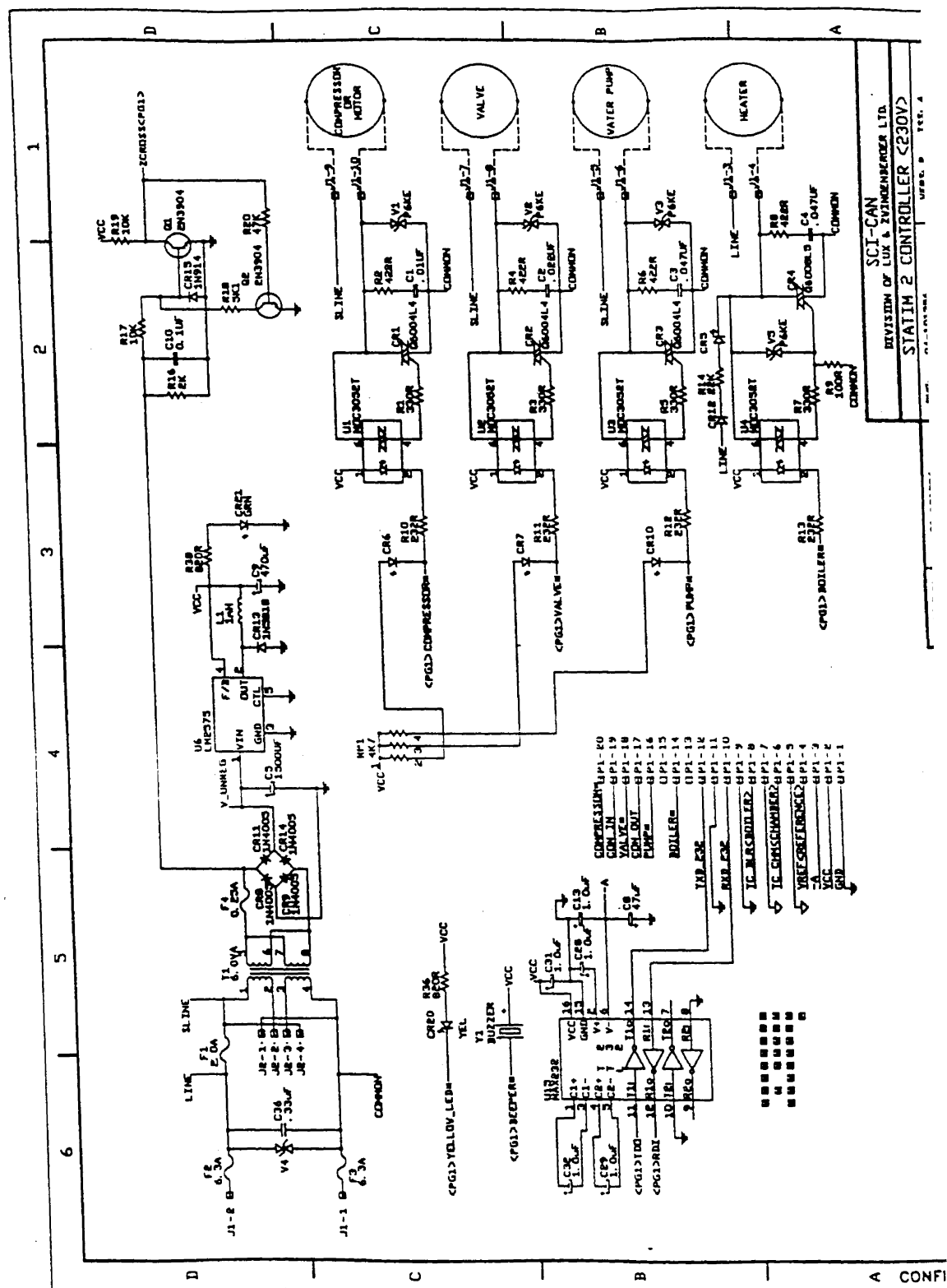
SCI-CAN
DIVISION OF LUX & ZWINGENBERGER LTD.
STATIM 2 CONTROLLER C100V2
PAGE 103932
REV 2 ISS 4



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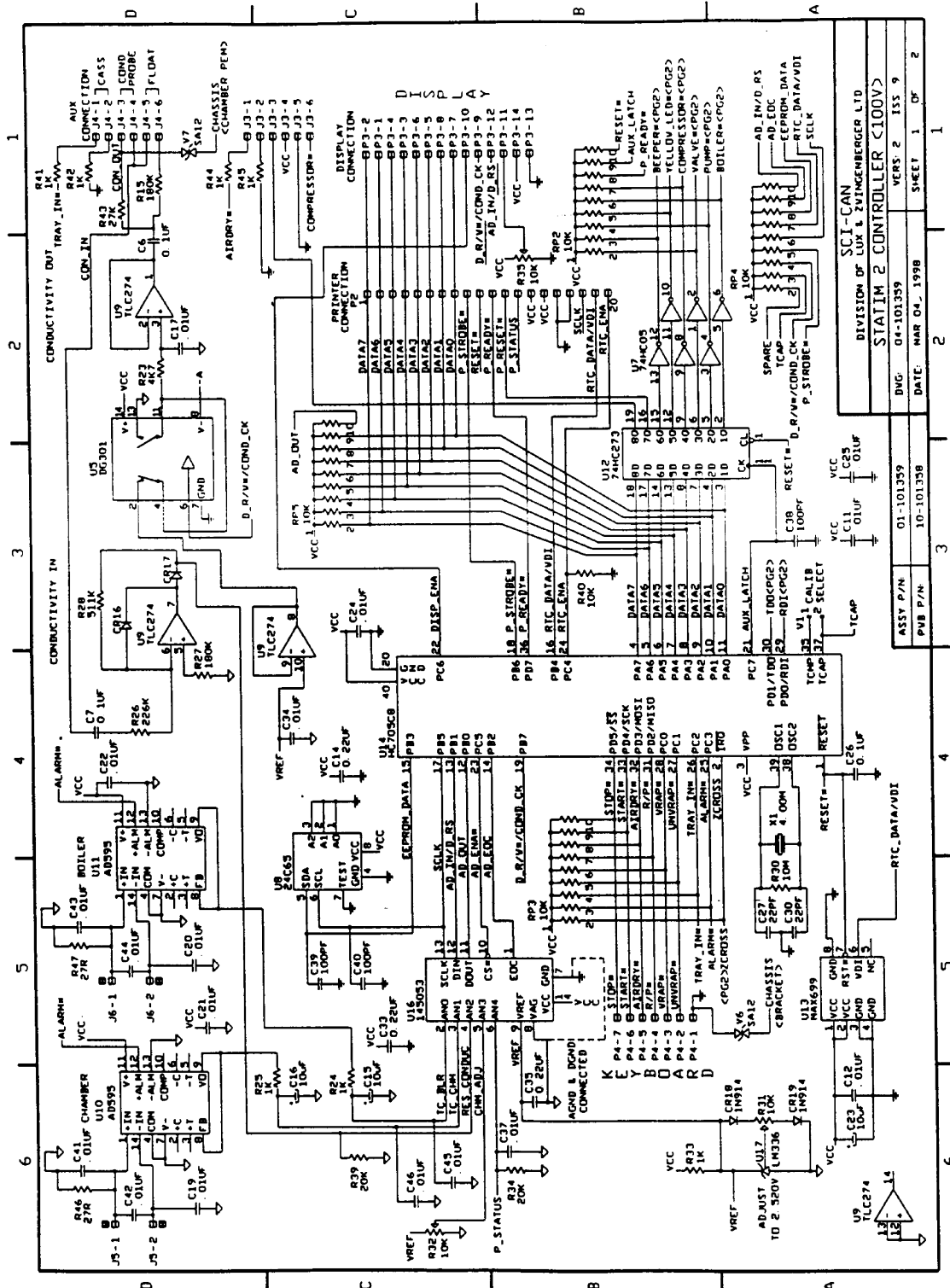




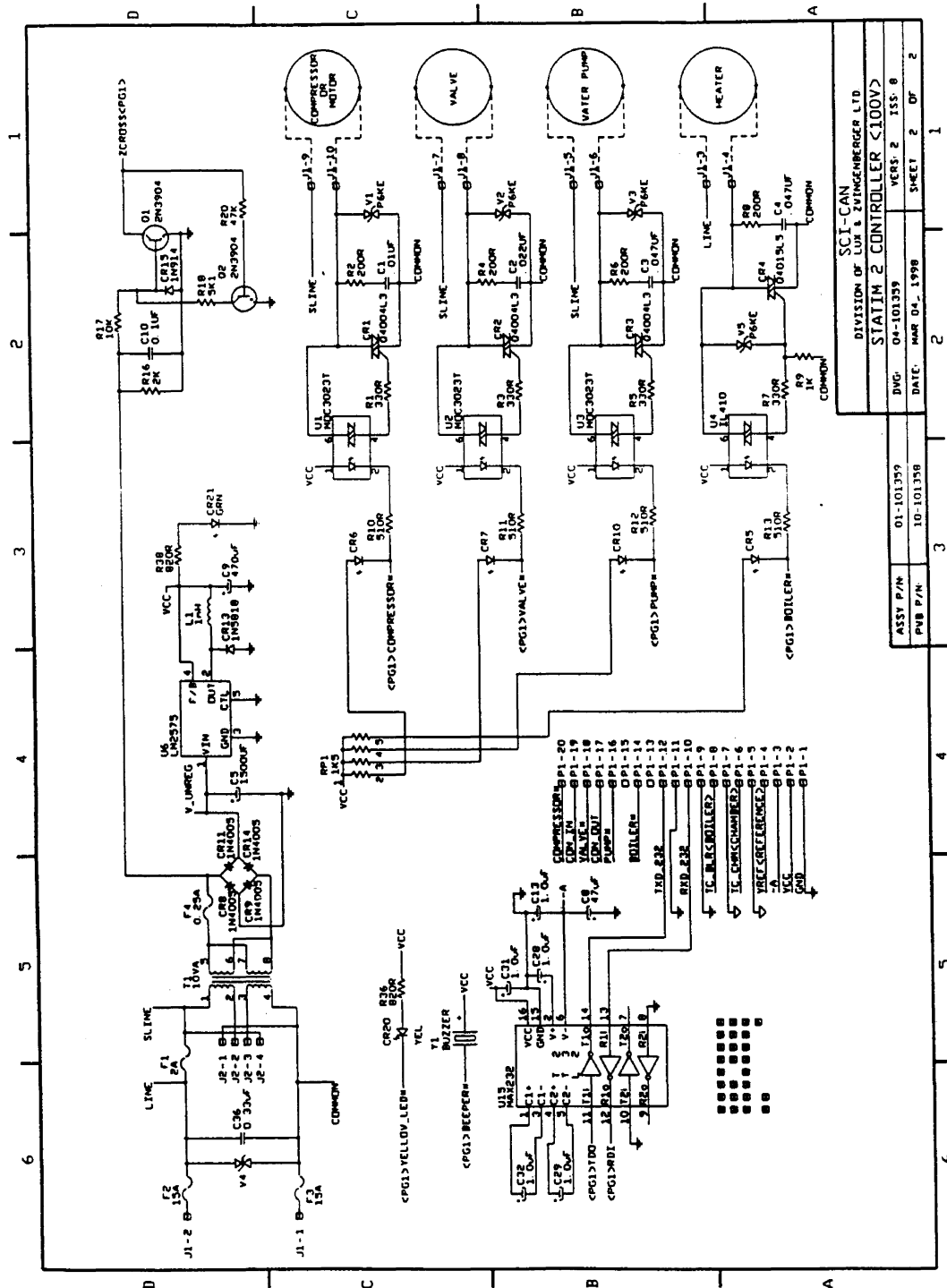


CONFIDENTIAL

Revision 2.9 PCB:



CONFIDENTIAL

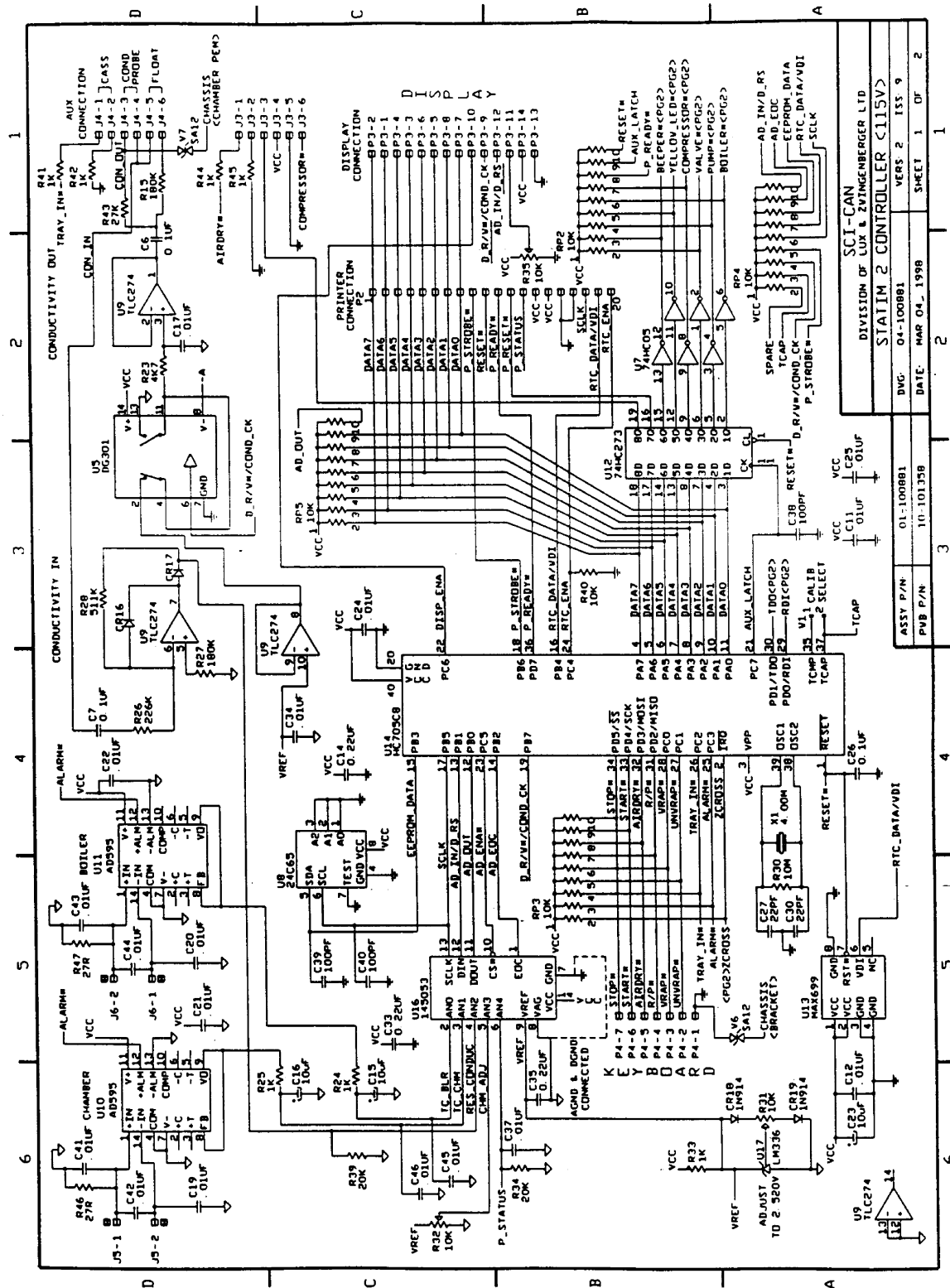


SCI-CAN
DIVISION OF LUM & ZWINGER LTD
STATIM 2 CONTROLLER <100V>

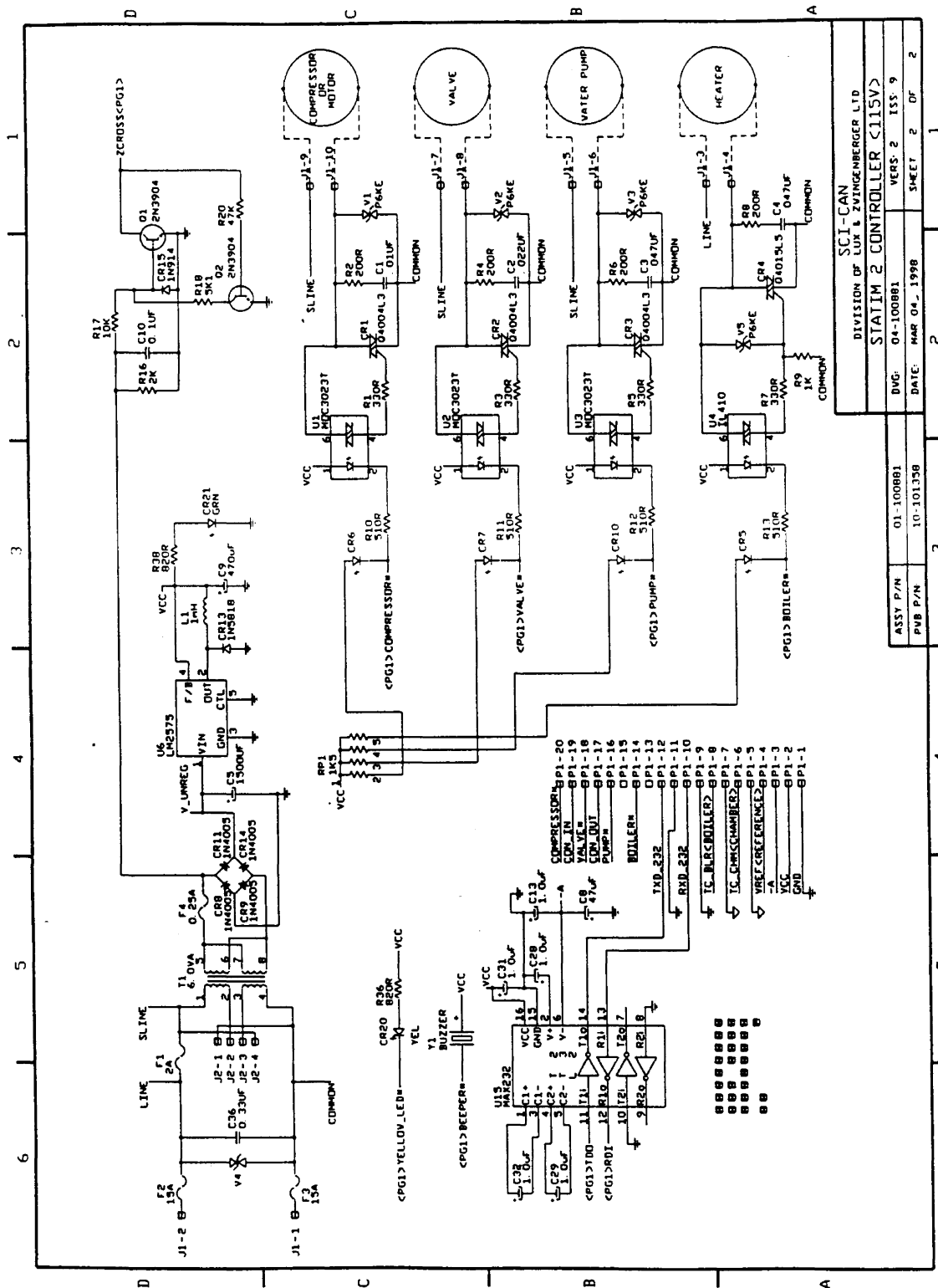
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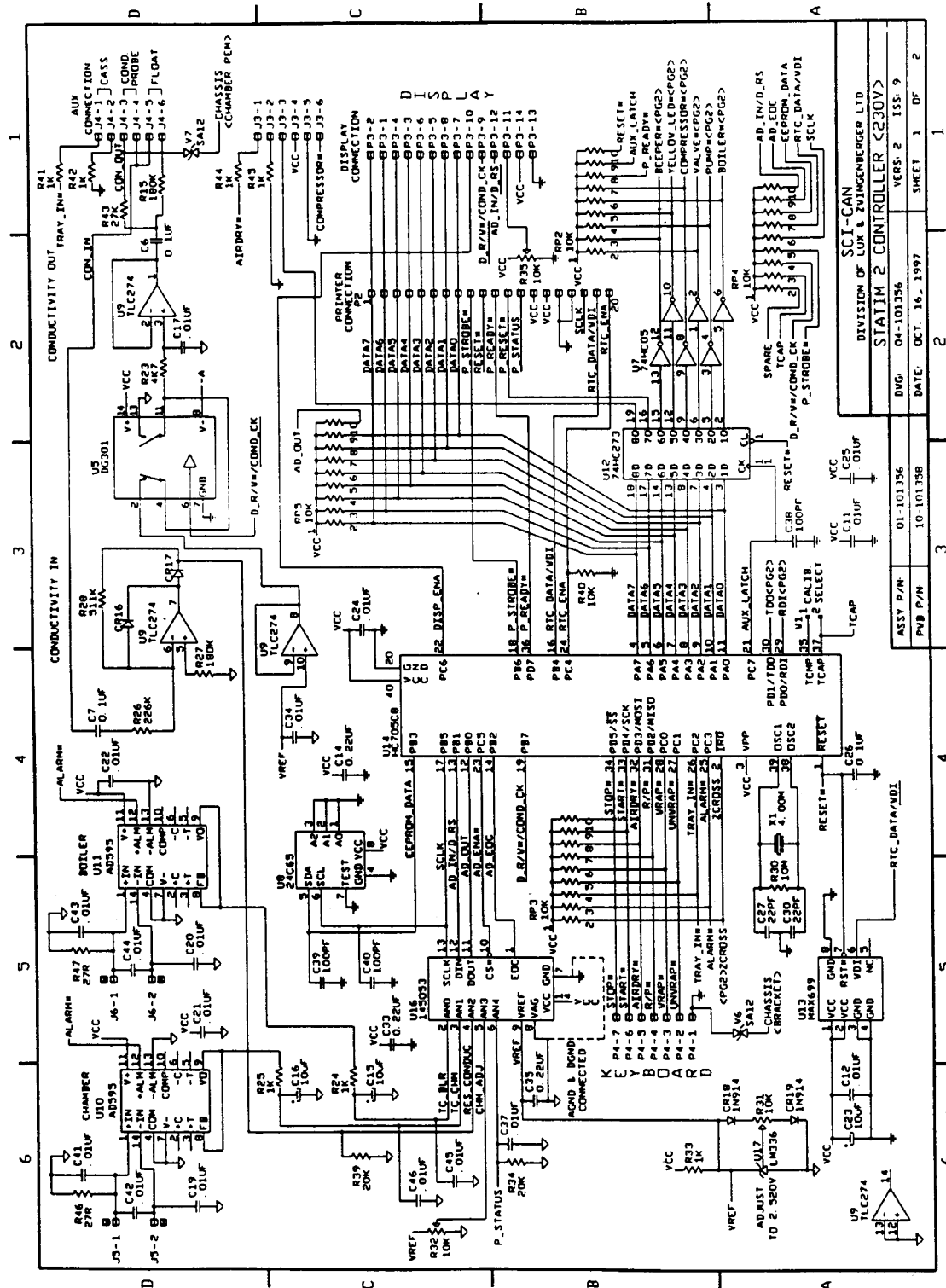
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DATE MAR 04, 1998

VERS 2 ISS 8
SHEET 2 OF 2

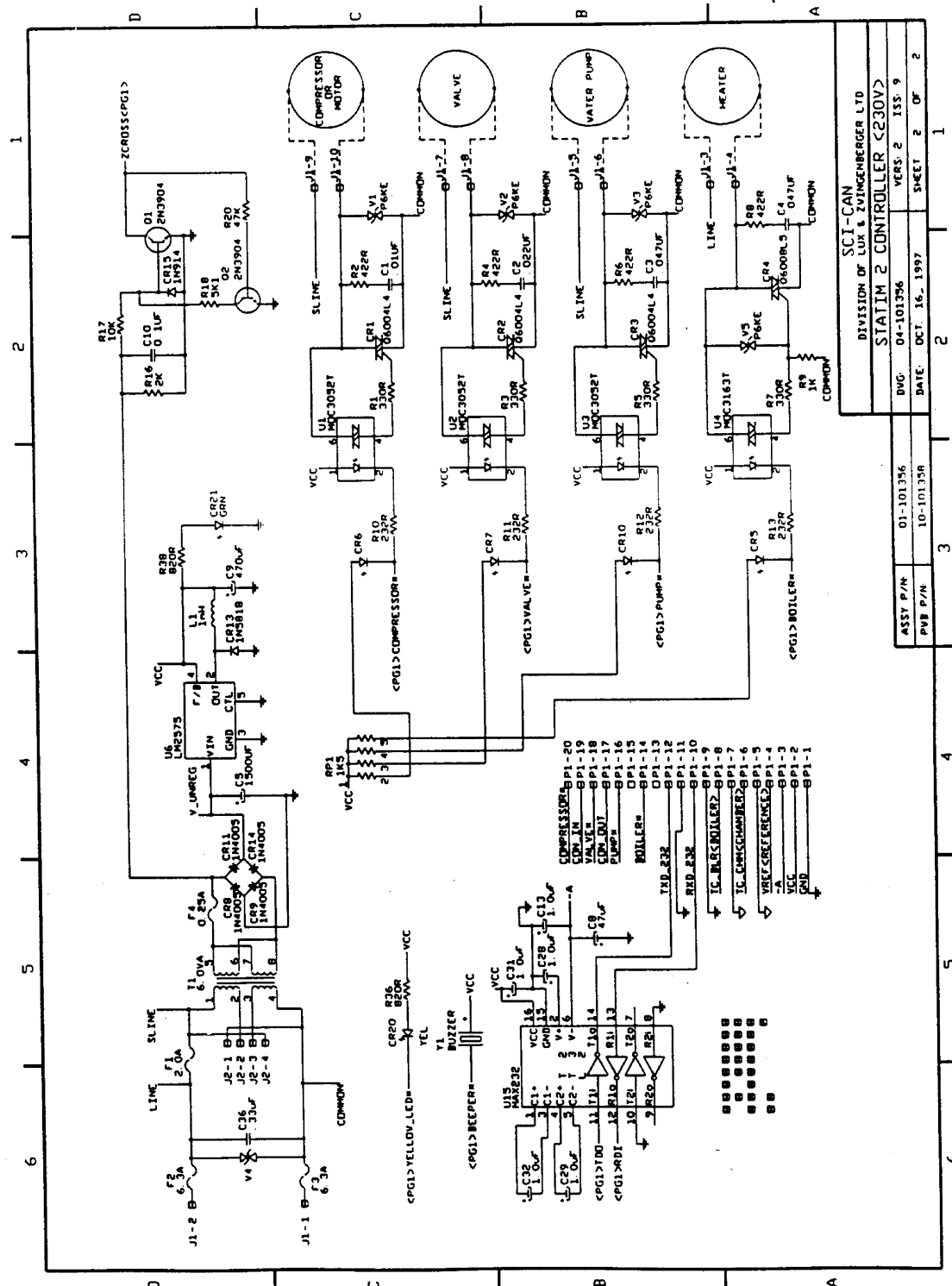


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Document Change Record

Document Number: 96-103932		Title: Controller Board Schematics and Reference Drawings	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Add Revision 2.9 PCB Schematics	99-0059

Microprocessor

!

STAT/ML / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTROSTATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLY IN STATIC-PROTECTED PACKAGING.

!

MICROPROCESSORS ARE NOT INTERCHANGEABLE BETWEEN CONTROLLER BOARDS OF DIFFERENT PART NUMBERS AND/OR REVISION, UNLESS OTHERWISE INDICATED.

!

THE MICROPROCESSOR AND EEPROM DEVICES ARE A MATCHED PAIR SET. THESE DEVICES MUST BE ORDERED AND INSTALLED TOGETHER. AN ATTEMPT TO SUBSTITUTE EITHER DEVICE ON ITS OWN RESULTS IN A CONTINUOUS BEEPING TONE.

Removing the Microprocessor and Preprogrammed EEPROM

Some Controller Board assemblies utilize a soldered EEPROM device and a socketed 40 pin microprocessor device. Other assemblies are manufactured with IC sockets for both devices.

To remove the Microprocessor (1) and preprogrammed EEPROM device follow these steps (see Figures 1 and 2):

- A1. If the unit being serviced is voltage rated at 110V (Canada ONLY) and there is a soldered EEPROM device and a socketed 40 pin microprocessor on the Controller Board, order the microprocessor kit indicated in *Spare Parts, Controller Board/Microprocessor Kits*.
If the unit being serviced is voltage rated at 100V or 230V and there is a soldered EEPROM device and a socketed 40 pin microprocessor on the Controller Board, please contact SciCan.
- A2. Remove the microprocessor from Controller Board socket U14 (2), using a 40 pin IC puller. DISCARD the microprocessor.
- A3. Follow installation instructions as found in *Microprocessor Kit Replacement - 110V Canada*.
- B1. If both the EEPROM device and 40 pin microprocessor reside in IC sockets, order a microprocessor kit. Determine the part number and revision of the installed Controller Board. (This number appears on component side of the board in the lower right-hand corner.) Determine the rated voltage of the unit by examining the serial number label. Use this information to find the appropriate microprocessor replacement as indicated in *Spare Parts, Controller Board/Microprocessor Kits*.
- B2. Remove the microprocessor from Controller Board socket U14 (2), using a 40 pin IC puller. Remove the EEPROM device from Controller Board socket U8 (4), using an 8 pin IC puller. DISCARD the microprocessor and EEPROM device.

1. microprocessor
2. 40 pin IC socket
3. EEPROM device
4. 8 pin IC socket

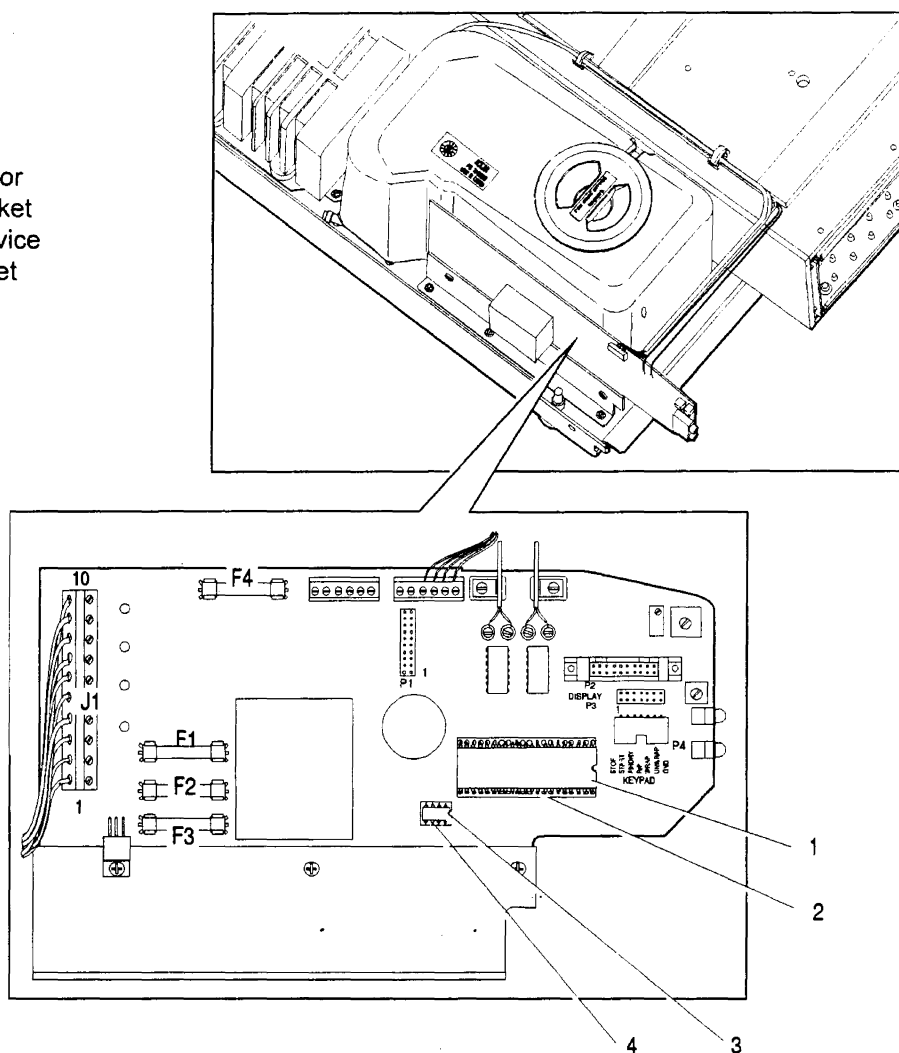


Figure 1

1. microprocessor
2. 40 pin IC socket

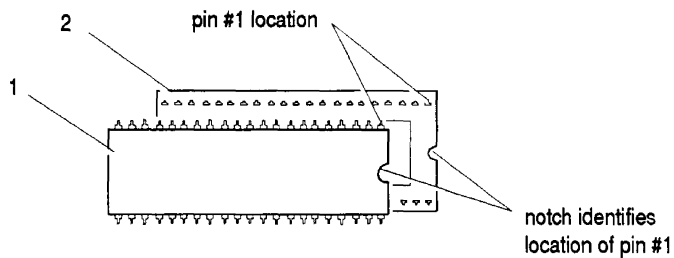


Figure 2

Replacing the Microprocessor (Both Devices Socketed)

!

STATIM L / 5000 / 5000S UNITS CONTAIN ELECTRONIC COMPONENT WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

!

THE MICROPROCESSOR AND EEPROM DEVICES ARE A MATCHED PAIR SET. THESE DEVICES MUST BE ORDERED AND INSTALLED TOGETHER. AN ATTEMPT TO SUBSTITUTE EITHER DEVICE SINGLE RESULTS IN A CONTINUOUS BEEPING TONE. See STATIM L / 5000 / 5000S *Software*.

!

NOTE THE ORIENTATION OF PIN #1 OF EACH IC DEVICE (1) AND PIN #1 OF EACH IC SOCKET (2). ENSURE THAT THE DEVICE PINS ARE FULLY INSERTED INTO THE SOCKET. INCORRECTLY INSTALLED IC DEVICES MAY CAUSE DAMAGE TO THE UNIT.

To replace the microprocessor, follow these steps (see Figures 1 and 2):

1. Using an insertion tool, install the microprocessor into Controller Board socket U14. Note pin orientation of the socket and microprocessor.
2. Using an insertion tool, insert the EEPROM device into Controller Board socket U8. Note the orientation of the EEPROM and socket.
3. Connect the keypad connector to Controller Board P4.
4. Connect the LCD connector to Controller Board P3.
5. Connect the printer connector to Controller Board P2, if present.
6. Power the unit ON. Ensure that the version number displayed briefly when the unit is first powered matches the version number printed on the microprocessor. If the LCD fails to display the "select a cycle" message, review the wiring connector placement and check that the microprocessor and EEPROM are positioned properly in the sockets.
7. The unit must be calibrated after the installation of a new microprocessor. See *Calibration*.
8. Reinstall the cover. See, STATIM L / 5000 / 5000S *Cover Removal and Replacement*.

Replacing the Microprocessor - 110V Canada Only

!

STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLE IN STATIC-PROTECTED PACKAGING.

!

THE MICROPROCESSOR AND EEPROM DEVICES ARE A NUMBER MATCHED PAIR SET. THESE DEVICES MUST BE ORDERED AND INSTALLED TOGETHER. AN ATTEMPT TO SUBSTITUTE EITHER DEVICE SINGLY RESULTS IN A CONTINUOUS BEEPING TONE. See STATIM L / 5000/ 5000S *Software*.

!

NOTE THE ORIENTATION OF PIN #1 OF EACH IC DEVICE (1) AND PIN #1 OF EACH IC SOCKET (2). ENSURE THAT THE DEVICE PINS ARE FULLY INSERTED INTO THE SOCKET. INCORRECTLY INSTALLED IC DEVICES MAY CAUSE DAMAGE TO THE UNIT.

To replace the microprocessor, follow these steps (see Figures 1 and 3):

The microprocessor kit contains two microprocessors. One, with the white dot and a label (1), is used to program the EEPROM. The other, with just a label, is the U14 replacement chip (2). (See Figure 3)

1. Using an insertion tool, install the EEPROM programming chip with the white dot into Controller Board socket U14. Note pin #1 orientation of both the socket and microprocessor.
2. Connect the SciCan control box to the unit. See *Required Information and Tools, The Control Box*.
3. Turn the power switch ON.
4. Messages are displayed in order on the control box LCD:

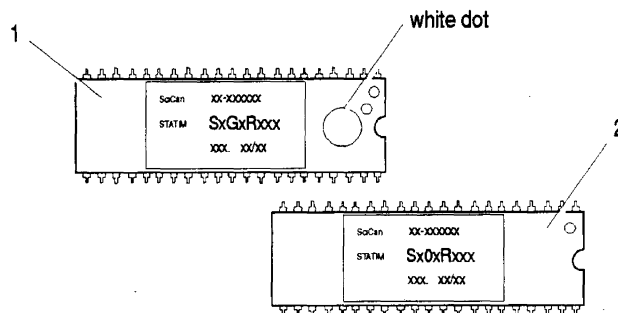
NOW LOADING...
PLEASE WAIT...

NOW VERIFYING...

MESSAGES LOADED OK..

5. If an error message is displayed, or the LCD remains blank, turn the power OFF and check that the control box is correctly connected to the Controller Board. Check that the microprocessor with the white dot is correctly installed. Repeat steps 3 and 4.

6. When the program is successfully loaded, turn the power OFF and extract the EEPROM programming chip from the U14 socket.
7. Using a 40 pin insertion tool, install the microprocessor into Contro Board socket U14. Note pin #1 orientation of the socket and microprocessor. The microprocessor has a label; it does not have white dot.
8. Ensure the SciCan control box is connected to the unit.
9. Power the unit ON. Ensure that the software version number displayed briefly when the unit is first powered matches the version number printed on the microprocessor. See *STATIM L / 5000/ 5000S Software*.
10. If the LCD fails to display the "select a cycle" message check that control box is correctly connected to the Controller Board and that microprocessor is positioned properly in the socket. Repeat step
11. The unit must be calibrated after the installation of a new microprocessor. See *Thermocouple Calibration*.
12. Reinstall the cover. See, *STATIM L / 5000/ 5000S Cover Removal and Replacement*.



1. EEPROM programming chip
2. microprocessor - U14

Figure 3

Document Change Record

Document Number: 96-103923		Title: Microprocessor	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-0059


STATIM L / 5000/5000S Software

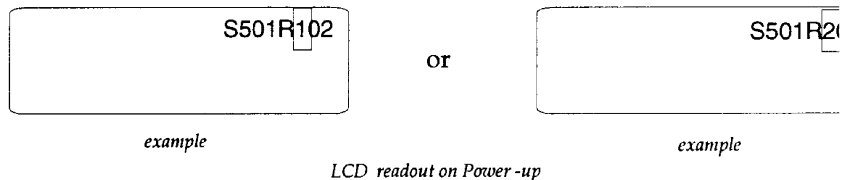
!


STATIM L / 5000/5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTROSTATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.


Identifying Software Versions


Immediately after power-ON a number is briefly displayed in the upper right hand corner of the LCD which indicates which software is installed (See Figure 1). This number is also printed on the label attached to the U14 microprocessor and the U8 EEPROM device on the Controller Board (See Figure 2).

The **software version number** is the character to the immediate right of the R as indicated by .



For example; S501R00 is software version 1.

S501R01 is software version 1.

S501R02 is software version 1.


S501R00 is software version 2.

Figure 1

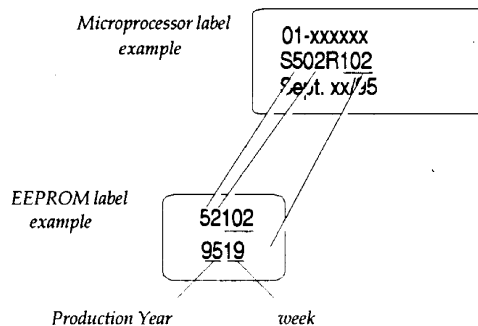


Figure 2

Version 2, Visible Changes

The latest software release has effected several changes:

1. The name of the cycle selected is now continually displayed on the LCD while the cycle is running.
2. If a cycle fault occurs, the user must acknowledge the fault condition by pressing the STOP button on the keypad before the unit will run another cycle. A power-OFF / power-ON cycle is not sufficient to clear a fault message.
3. If power to the unit is interrupted, (i.e., a power failure, turning the power switch OFF or the plug is accidentally removed.) the unit will enter the "CYCLE INTERRUPTED" state when power is restored. The display reads:

CYCLE INTERRUPTED
NOT STERILE

then

example

CYCLE INTERRUPTED
PRESS STOP TO RESET

then

example

CYCLE INTERRUPTED
REMOVE CASSETTE

example

The user must press STOP to clear the fault message before the unit will run a cycle.

New Service Features

Version 2 software allows printing of the last complete or incomplete cycle as a diagnostic tool.

To print the last cycle information follow these steps:

1. Turn the STATIM L / 5000/5000S OFF and remove the cover.
2. Install a calibration jumper on Controller Board header W1 located to the left of the microprocessor. Connect a Control Box and printer to the

Controller Board and enable the printer (see *STATIM L / 5000/5000S Calibration*).

If a printer was not resident in the unit when the fault occurred a STATIM L / 5000/5000S printer can still be used as a diagnostic tool, however the time and date printed on the report will not be valid.

3. Turn the STATIM L / 5000/5000S ON. The unit is now in calibrating mode.
4. **Without** selecting a cycle, press the START button. The printer will print the last complete or incomplete cycle. This information can be useful in diagnosing intermittent problems when the cycle fault code has not been recorded.

New Cycle Fault Conditions

The following additional cycle fault conditions are detected by Version 2 control software:

- cycle faults 20-24, reserved
- cycle fault 25, see Trouble-shooting Guide
- cycle fault 26, see Trouble-shooting Guide
- cycle fault 27, see Trouble-shooting Guide

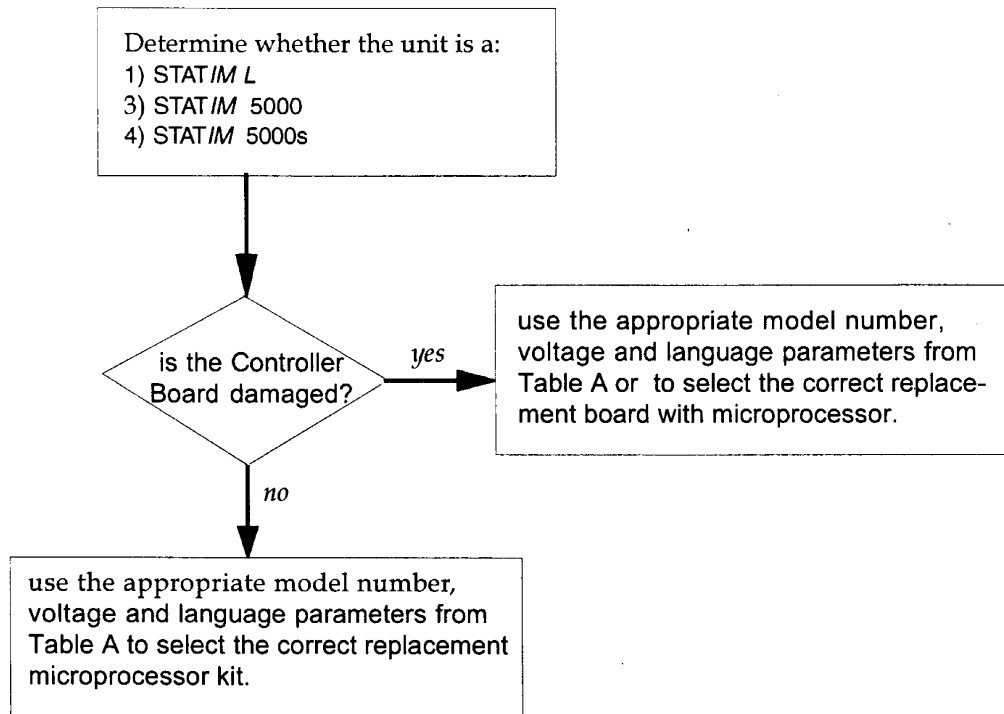
For further information see, *EEPROM - Language Selection, Thermoco Calibration* and/or the *Trouble-shooting Guide*.

Statim 5000S:

For information on 5000S software cycle faults, descriptions and causes see *STATIM S-Class Cycle Fault Guide*.

Controller Board and Microprocessor Compatibility

Each unit requires specific software. In order to determine which software is required or if a new Controller Board is required several steps must be followed.



When ordering replacement microprocessor kits only, SciCan will ship the latest version of compatible software.

MODEL	VOLTAGE	LANGUAGE	REPLACEMENT BOARD WITH MICRO- PROCESSOR	REPLACEMENT MICR PROCESSOR ONLY
STATIM 5000	100V	MULTI	01-103487S	01-103686S
STATIM 5000 USA	110V	MULTI	01-104436S	01-104437S
STATIM 5000	110V	MULTI	01-103629S	01-103605S
STATIM 5000	230V	MULTI	01-103551S	01-103550S
STATIM 5000 FRANCE	230V	MULTI	01-104170S	01-104169S
STATIM 5000 AUSTRALIA	230V	ENGLISH	01-104395S	01-104394S
STATIM 5000S	230V	MULTI	01-104730S	01-104693S
STATIM 5000S FRANCE	230V	MULTI	01-106083S	01-106084S

TABLE A

Document Change Record

Document Number: 96-103936		Title: STATIM L / 5000/5000S Software	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99-01-23	Added 5000S information	99-0059

STATIM L / 5000 Language Selection

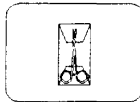
!

STATIM L/5000 units manufactured with Controller Boards prior to version of the respective board do not support the language selection feature.

FOR MICROPROCESSOR AND SOFTWARE INFORMATION see Service Guide sections, *Microprocessor*, *STATIM L/5000 Software Trouble-shooting Guide*.

The messages displayed on the LCD can be changed to a language preference. To change to a language of preference, follow these steps.

1. Turn the power switch to the OFF position.



2. Press and hold the WRAPPED button on the keypad. At the same time, with the other hand, turn the power switch at the back of the unit ON.



3. Press the WRAPPED button again to scroll to the next language selection.



4. Press the UNWRAPPED button to scroll to the previous language selection.



5. When the desired language is displayed, press the STOP button to save the selection and return to the regular operating mode.

Document Change Record

Document Number: 96-103928		Title: STAT/M L / 5000/ 5000S Language Selection	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-005

Thermocouple Calibration

!

ALWAYS CALIBRATE THE THERMOCOUPLES AFTER A THERMOCOUPLE REPLACEMENT, THERMOCOUPLE BEND OR DISCONNECT, CONTROLLER BOARD REPLACEMENT OR MICROPROCESSOR / EEPROM REPLACEMENT.

!

MAKE SURE THAT THERE IS SUFFICIENT STEAM-PROCESS DISTILLED WATER IN THE STATIM L / 5000/ 5000S PRIOR TO STARTING CALIBRATION.

!

DO NOT PLACE THE DIGITAL REFERENCE THERMOMETER IN DIRECT SUNLIGHT, ON THE ARMATURE OR ANY OTHER HOT SURFACES. THIS MAY CAUSE IMPROPER VALUES ON THE TEMPERATURE READOUT.

The chamber and steam generator thermocouples must be calibrated to ensure the correct operation of the STATIM L / 5000/ 5000S. The steam generator thermocouple is calibrated automatically by a special calibration cycle in the STATIM L / 5000/ 5000S. The chamber thermocouple is calibrated by adjusting a potentiometer on the Controller Board while comparing the temperature on the LCD display with the temperature measured by the digital reference thermometer within the calibration cassette. In calibration mode no error messages are displayed.

To calibrate the STATIM L / 5000/ 5000S, follow these steps (see Figure 1)

1. Turn the STATIM L / 5000/ 5000S OFF and remove the cover. Fill the reservoir with steam process distilled water and prime the pump. See the Operator's Manual for instructions on priming the pump. Replace the stopper in the tube and leave it outside the unit for further use.
2. Install a calibration jumper on Controller Board header W1 located to the left of the microprocessor. Connect the Control Box to the controller board.
3. Set the control box SELECT knob to **Vref** and connect a voltmeter as shown in Figure 2.
4. Power the STATIM L / 5000/ 5000S ON. The LCD message appears:

00>>	CALIBRATING	<<F9
+1.00°C		20.00°C

example

The value in the lower right-hand corner of the display is the chamber temperature. The value in the lower left-hand corner of the display is the difference between the steam generator and chamber temperatures.

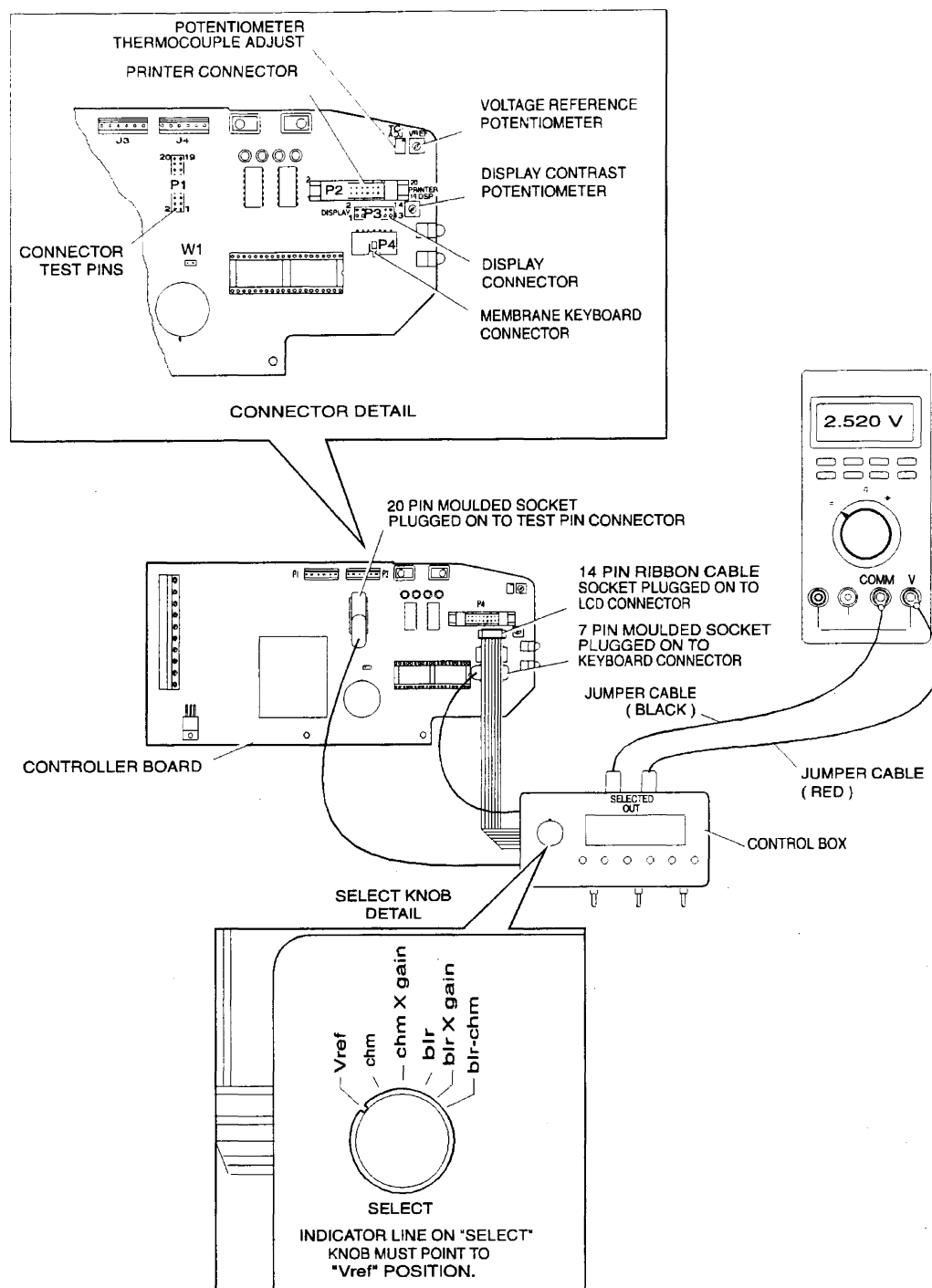


Figure 2

The two digits in the upper right-hand corner of the display represent the chamber offset value in hexadecimal. The two digits in the upper left-hand corner of the display represent the steam generator offset value in hexadecimal.

5. Adjust the Vref potentiometer on the Controller Board to set the reference voltage to $2.520V \pm 0.001V$.
6. Before starting calibration, check that there is sufficient steam process distilled water in the reservoir, and that the calibration cassette is correctly engaged in the STATIM L / 5000/ 5000S. In this mode, error messages are not displayed.
7. Install the calibration cassette into the STATIM L / 5000/ 5000S and attach the digital reference thermometer.
8. Calibrate the steam generator thermocouple. See *Steam Generator Thermocouple Calibration*.
9. Calibrate the chamber thermocouple. See *Chamber Thermocouple Calibration*.
10. After calibration is complete, turn the STATIM L / 5000/ 5000S OFF and remove the calibration jumper.
11. Disconnect the Control box.
12. Connect the right angle LCD connector to Controller Board P3.
13. Connect the keypad connector to Controller Board P4.
14. Reinstall the cover. See STATIM L / 5000/ 5000S Cover Removal and Replacement.

Steam Generator Thermocouple Calibration

To calibrate the steam generator thermocouple follow these steps (see Figure 1):

1. To start a steam generator self calibration cycle, hold down the UNWRAPPED cycle button on the control box and press the START button. An asterisk * will appear beside the message CALIBRATING.

00>>	CALIBRATING*	<<F9
+2.00°C		135.00°C

example

If the asterisk * does not appear, press the STOP button on the control box. Turn the power switch OFF then ON again. Hold down the UNWRAPPED cycle button on the control box and press the START button to start the self calibration again.

2. During the steam generator warm up (before the cassette temperature reaches 100°C), adjust the calibration potentiometer so that the displayed chamber temperature matches the temperature of the digital thermometer to within 2°C.
3. As the cycle proceeds, the chamber temperature will eventually reach sterilization temperature. After 20-40 seconds, a long beep will sound indicating that steam generator calibration is complete. The number in the upper left-hand corner of the LCD has changed to display the new steam generator offset value.

C8>>	CALIBRATING*	<<F9
+0.00°C		20.00°C

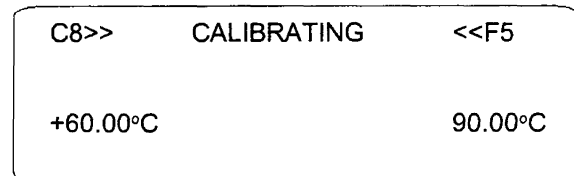
example

4. Press the STOP button on the control box to end the steam generator calibration cycle.

Chamber Thermocouple Calibration

To calibrate the chamber thermocouple follow these steps (see Figure 1

1. Turn the power switch to OFF. Ensure the calibration jumper is in place and turn the power switch ON. The LCD will read:



example

2. To start a chamber calibration cycle, press and release the UNWRAPPED cycle button on the control box and then press the START button. The STAT/M L / 5000 / 5000S will run a regular UNWRAPPED cycle, but continue to show calibration information on the LCD.
3. Allow the chamber to reach the sterilization temperature. To change the temperature display on the LCD to match the temperature displayed on the digital thermometer, adjust the TC-ADJ potentiometer on the Controller board. Continue adjusting TC-ADJ until the temperatures on the LCD and digital thermometer are within $\pm 0.25^{\circ}\text{C}$.
4. Observe the temperatures displayed on the LCD and the digital thermometer for 30 seconds. The temperatures registered should remain within $\pm 0.25^{\circ}\text{C}$ of one another. Adjust TC-ADJ if not.
5. Press the STOP button on the control box when finished. Wait for beeps to signal that the cassette may be removed.

CALIBRATION OF S-CLASS UNITS**WARNING**

- INCORRECT OR INACCURATE CALIBRATION MAY CAUSE UNSUCCESSFUL STERILIZATION OF INSTRUMENTS.
- ALWAYS RECALIBRATE THE THERMOCOUPLES AND PRESSURE TRANSDUCER AFTER REPLACING A STEAM GENERATOR, PROBE BRACKET, PRESSURE TRANSDUCER, CONTROLLER BOARD, PRESSURE INTERFACE BOARD, OR MICROPROCESSOR/EEPROM. IN ADDITION, AFTER THE THERMOCOUPLE IS BENT OR RECONNECTED TO THE CONTROLLER BOARD, RECALIBRATION IS RECOMMENDED.
- S-CLASS UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN CALIBRATING.
- ALWAYS WEAR A STATIC STRAP WHEN WORKING WITH OR NEAR PRINTED WIRING BOARDS. IN ADDITION, USE STATIC FOOTSTRAPS, GROUNDING MATS AND GROUNDED WORK SURFACES WHEN CALIBRATING.
- MAKE SURE THAT THERE IS SUFFICIENT STEAM-PROCESS DISTILLED WATER IN THE UNIT PRIOR TO STARTING CALIBRATION.

The chamber and steam generator thermocouples and the pressure transducer must be calibrated to ensure the correct operation of the unit.

The steam generator thermocouple is calibrated automatically by a special calibration cycle.

The chamber thermocouple is calibrated by adjusting a potentiometer on the Controller Board while comparing the chamber temperature reading on the LCD display with the temperature measured by the reference thermometer within the calibration cassette.

The pressure transducer is calibrated by using the UNWRAPPED and WRAPPED cycle buttons on the membrane keypad to adjust the measured chamber pressure reading on the LCD to match the reference meter attached to the cassette. The calibration is then verified by comparing the measured chamber pressure to the calculated chamber pressure and making a fine adjustment, if necessary. If a pressure reference is not available, the pressure transducer can still be calibrated using only a temperature reference, since the software can calculate the pressure of the steam inside the cassette from the cassette temperature. The accuracy of this method would depend on how accurately the chamber thermocouple has been calibrated. The preferred method is to use a pressure reference.

FIGURE 1 - EQUIPMENT

1. Control box
2. Controller board
3. Select switch
4. Dresser Calibration reference meter (For measuring voltage, temperature and pressure) or digital thermometer
5. Vref potentiometer (not shown, on controller board)
6. Calibration cassette
7. RTD (Resistance temperature detector) or thermocouple
8. TC-ADJ potentiometer (not shown, on controller board)
9. Calibration header
10. Calibration jumper (not shown)
11. Quick connect- male end
12. Quick connect - female end
13. Compression fitting
14. Pressure calibration tubing
15. Digital voltmeter (not shown)

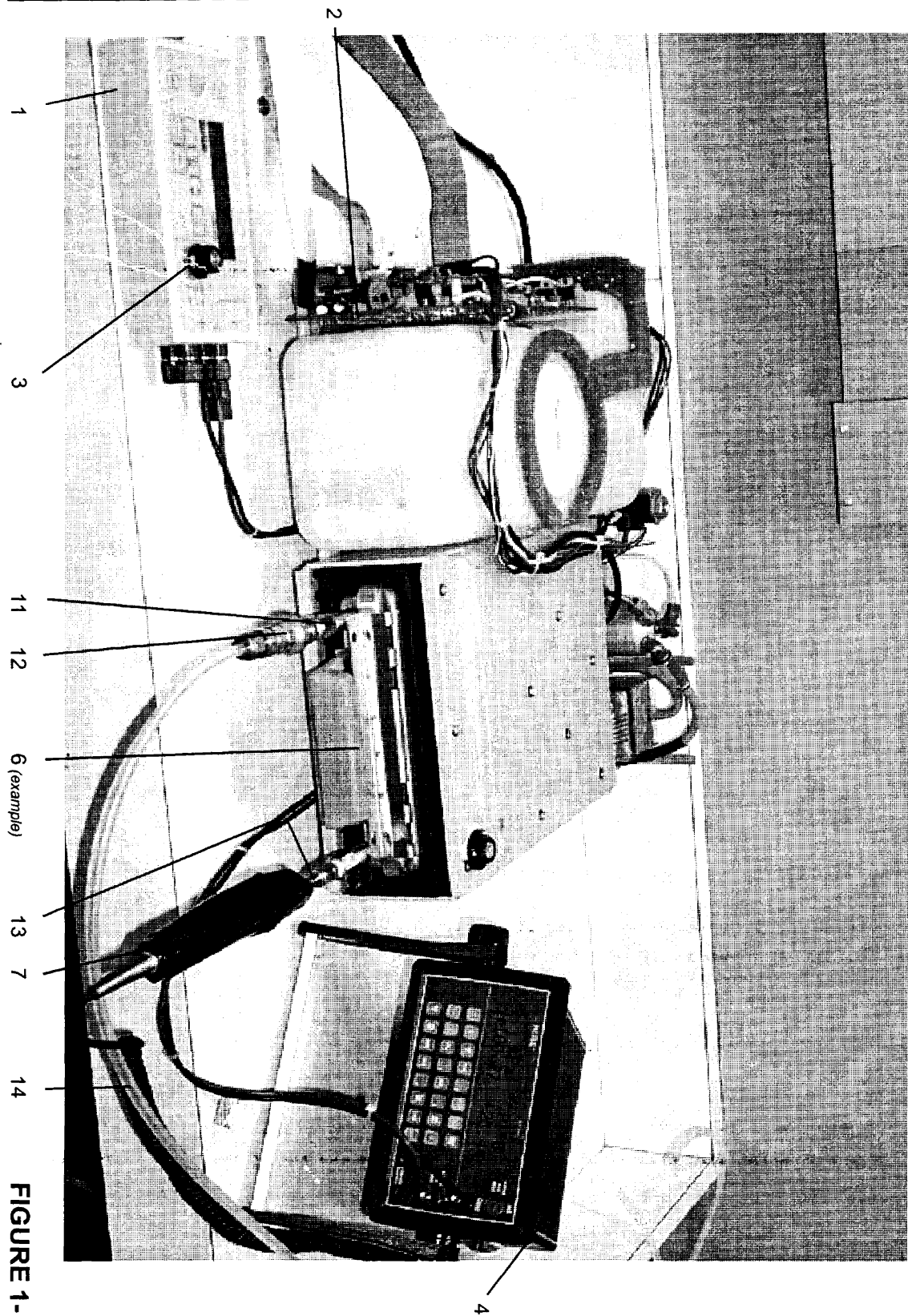
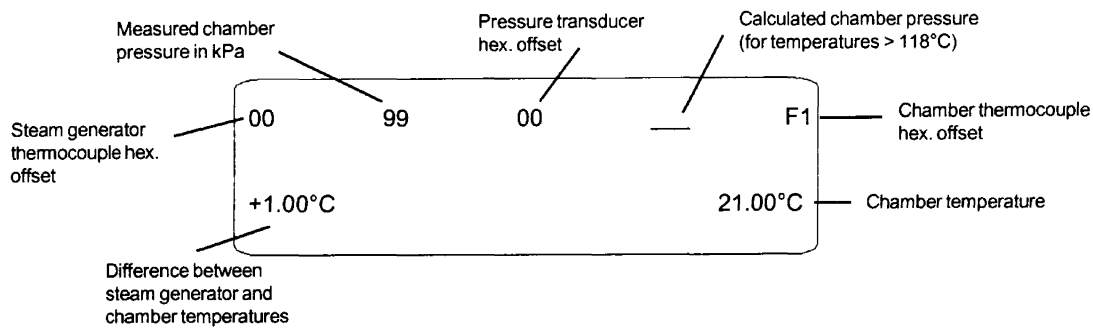


FIGURE 1-
EQUIPMENT

FIGURE 2 - CALIBRATION MODE S-CLASS LCD DISPLAY**GENERAL PROCEDURE FOR CALIBRATION (WITHOUT DRESSER METER)**

NOTE: THIS PROCEDURE IS ONLY FOR PERFORMING A COARSE ADJUSTMENT OF THE PRESSURE TRANSDUCER AND REQUIRES A THERMOMETER WITH AN ACCURACY OF 0.1°C OR BETTER.

1. Turn the unit OFF and remove the cover. Fill the reservoir with steam process distilled water and prime the water pump.
2. Connect the SciCan Control Box (1) to the controller board (2): connect the LCD cable to P3, the membrane keypad to P4 and the data cable to P1.
3. Install the thermocouple into the calibration cassette and connect it to the digital thermometer(4). Ensure that the thermocouple and digital thermometer have matched serial numbers.
4. Install a calibration jumper (10) to the Controller Board header W1 (9).
5. Connect the test leads from the control box output marked Vref to the digital voltmeter(15).
6. Setup the digital voltmeter to read DC volts with a resolution of 1mV.
7. Switch ON the unit. The LCD message appears similar to Figure 2.
8. Select Vref on the control box.
9. Adjust the potentiometer (5) to read 2.520 volts on the meter. Once Vref is adjusted, apply a drop of non-conducting lacquer to the adjustment screw.
10. Switch OFF the unit and disconnect the test leads from the control box and the meter.
11. Insert the calibration cassette fully into the unit.
12. Calibrate the steam generator thermocouple. See *Steam Generator Thermocouple Calibration*.
13. Calibrate the pressure transducer and chamber thermocouple. See *Chamber Thermocouple and Pressure Transducer Calibration (without Dresser meter)*.
14. Repeat step 12 and verify the chamber thermocouple calibration by comparing the chamber temperature on the STATIM LCD with the calibration meter.

15. Once calibration is complete, turn the unit OFF, remove the calibration jumper and disconnect the SciCan Control Box from the controller board.
16. Reinstall the cover. See *Cover Removal and Replacement*.

GENERAL PROCEDURE FOR CALIBRATION (WITH DRESSER METER)

1. Turn the unit OFF and remove the cover. Fill the reservoir with steam process distilled water and prime the water pump.
2. Connect the SciCan Control Box (1) to the controller board (2): connect the LCD cable to P3, the membrane keypad to P4 and the data cable to P1.
3. Connect the RTD (7) to the calibration reference meter (4) and insert the RTD into the calibration cassette. RTD compression fitting (13) is designed to support the RTD and is provided with a nut and two ferrules. Fit and tighten the nut to ensure perfect sealing under pressure. Do not use a wrench. Do not change the position of the RTD after the nut is tightened.
4. Screw the quick-connect (11) provided loose with the calibration cassette (6) into the pressure port at the back of the meter.
5. Connect the pressure calibration tubing (14) to the meter and calibration cassette by applying pressure to the quick connect (12) until a click is heard which confirms that they are locked.
6. Connect the test leads from the control box output marked Vref to the banana jack sockets marked COM and + on the meter.
7. Power ON the calibration reference meter and note the ambient temperature and pressure. **Ensure that the meter is not due for calibration.**
8. Install a calibration jumper (10) to the Controller Board header W1 (9).
9. Power ON the unit. The LCD message appears similar to Figure 2.
10. Setup the meter to display DC volts.
11. Select Vref on the control box.
12. Adjust the potentiometer (5) to read 2.520 volts on the meter. Apply a drop of non-conductive lacquer to the adjustment screw.
13. Turn off the unit and disconnect the test leads from the control box and the meter.
14. Insert the cassette fully into the unit.
15. Calibrate the steam generator thermocouple. See *Steam Generator Thermocouple Calibration*.
16. Calibrate the pressure transducer and chamber thermocouple. See *Chamber Thermocouple and Pressure Transducer Calibration*.
17. Repeat step 15 and verify the chamber thermocouple calibration by comparing the chamber temperature on the STATIM LCD with the calibration meter.

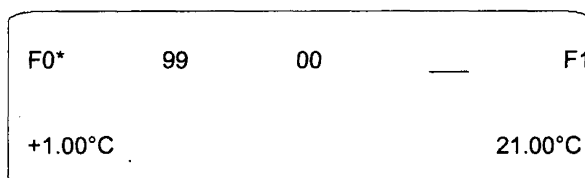
18. Once calibration is complete, turn the unit OFF, remove the calibration jumper, disconnect the SciCan Control Box from the controller board.
19. Remove the RTD from the cassette and disconnect the pressure tubing.
20. Reinstall the cover. See *Cover Removal and Replacement*.

STEAM GENERATOR THERMOCOUPLE CALIBRATION

To calibrate the steam generator thermocouple, follow these steps (see Figure 1 and 2):

1. Turn the unit off and install a calibration jumper on controller board header W1. Turn ON the unit. The LCD should appear similar to the Figure 2.
2. To start a steam generator self calibration cycle, hold down the UNWRAPPED cycle button on the control box and press the START button. An asterisk (*) will appear beside the steam generator offset and the steam generator offset value will change to F0.

The LCD appears:



example

If the asterisk (*) does not appear, press the STOP button on the control box twice to reset the unit. Ensure that the calibration jumper is still installed on the controller board header W1 and turn the power switch OFF then ON again. Hold down the UNWRAPPED cycle button on the control box and press the START button to start the self calibration cycle again.

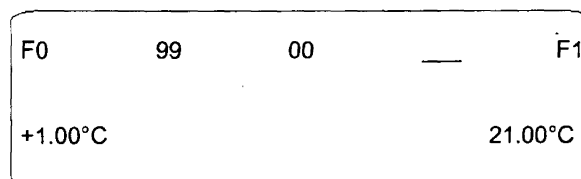
3. If the Controller Board is new and has never previously been calibrated, adjust the TC-ADJ potentiometer (8) until the chamber thermocouple offset reads F5. If the Controller Board has previously been calibrated this adjustment is not necessary.
4. As the cycle proceeds, the chamber temperature reaches the sterilization temperature, drops to 115°C and then regains sterilization temperature. After 20 - 40 seconds, a long beep will sound indicating that steam generator thermocouple calibration is complete. The number in the upper left-hand corner of the LCD has changed to display the new steam generator offset value.
5. Press the STOP button on the control box to end the steam generator calibration cycle and to depressurize the cassette. Press STOP a second time to reset the unit.

CHAMBER THERMOCOUPLE/PRESSURE TRANSDUCER CALIBRATION (WITHOUT DRESSER METER)

To calibrate the chamber thermocouple and pressure transducer without using an independent pressure reference follow these steps (see Figure 1 and 2):

1. Turn the power switch OFF. Ensure the calibration jumper is in place on the controller board header W1 and the power switch ON.

The LCD will read:



example

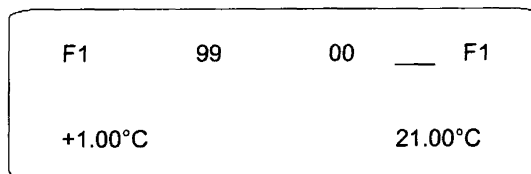
2. Fully insert the calibration cassette.
 3. To start a chamber thermocouple/pressure transducer calibration cycle, press and release the UNWRAPPED cycle button and then press START. The unit will run a regular UNWRAPPED cycle, but continue to display calibration information on the LCD.
 4. Allow the chamber to reach the sterilization temperature. As pressure builds in the chamber check for leaks the cassette, associated piping and fittings. A steam leak in the system will introduce errors in the measure and will result in improper calibration and non-sterile instruments.
 5. Once the unit has reached sterilization and the temperature and pressure are stable, compare the chamber temperature displayed on the LCD with the temperature displayed on the digital thermometer. Adjust the T_{ADJ} potentiometer on the Controller Board until the LCD temperature matches the reference temperature to within $\pm 0.25^{\circ}\text{C}$. After adjustment observe the values for 30 seconds. They should not be apart by more than 0.25°C .
 6. Compare the measured chamber pressure and the calculated chamber pressure displayed on the LCD. If they are more than 1kPa apart, press the UNWRAPPED or WRAPPED cycle buttons to raise or lower the pressure transducer offset and bring the two readings to within 1kPa.
- Note: The offset for the measured chamber pressure can be increased or decreased in 0.5kPa steps. Pressing the UNWRAPPED button adds 0.5kPa and pressing the WRAPPED button subtracts 0.5kPa.**
7. When the calibration is complete, press the STOP button on the control box and wait for the beeps to signal the cassette may be removed. Press the STOP button again to reset the unit.
 8. Recalibrate the steam generator thermocouple. See *Steam generator thermocouple calibration*.

CHAMBER THERMOCOUPLE/PRESSURE TRANSDUCER CALIBRATION (WITH DRESSER METE

To calibrate the chamber thermocouple and pressure transducer follow these steps (see Figures 1 and 2):

1. Turn the power switch OFF. Ensure the calibration jumper is in place on the controller board header W1 and turn the power switch ON.

The LCD will read:



example

2. Setup the reference meter to display pressure in kilopascal and temperature in celsius.
3. With the calibration cassette removed and the pressure tubing disconnected at both ends, compare the measured chamber pressure reading on the LCD to the pressure displayed on the reference meter. The difference between them multiplied by two is the pressure transducer offset.
4. Fully insert the calibration cassette and connect the pressure calibration tubing.
5. To start a chamber thermocouple/pressure transducer calibration cycle, press and release the UNWRAPPE cycle button and then press START. The STATIM2000S/5000S will run a regular UNWRAPPED cycle, but continue to display calibration information on the LCD.
6. Immediately after pressing the START button, use the UNWRAPPED and WRAPPED cycle buttons to make the measured chamber pressure reading displayed on the LCD equal to the reference meter reading. Once the boiler begins producing steam the pressure cannot be accurately zero-adjusted to atmospheric pressure.

Note: The offset for the measured chamber pressure can be increased or decreased in 0.5kPa step. Each press of the UNWRAPPED button adds 0.5kPa and each press of the WRAPPED button subtracts 0.

7. Allow the chamber to reach the sterilization temperature. As pressure builds in the chamber check for leaks in the cassette, associated piping and fittings. A steam leak in the system will introduce errors in the measurement and will result in improper calibration and non-sterile instruments.
8. Once the unit has reached sterilization and the temperature and pressure are in equilibrium compare the chamber temperature displayed on the LCD with the temperature displayed on the reference meter. Adjust the T ADJ potentiometer on the Controller Board until the LCD temperature matches the reference temperature to within $\pm 0.25^{\circ}\text{C}$.

NOTE: The 1/8" RTD measuring the temperature in the cassette has a slightly slower response time than the 1/16" thermocouple in the unit. Wait ten seconds after the water pump turns off to allow the pressure and temperature readings to stabilize before making any adjustments.

9. Compare the measured chamber pressure and the calculated chamber pressure displayed on the LCD. The should be within 1kPa of each other during equilibrium. If not, adjust the pressure offset using the membran keypad by ONE UNIT ONLY. If the readings still differ by more than 1kPa, using the TC-ADJ potentiometer adjust the chamber offset by ONE unit. If the readings still differ by more than 1kPa abort the cycle and retr chamber thermocouple/pressure transducer calibration.

During Sterilization and after all necessary adjustments have been made, the measured chamber pressure indicated by the reference meter and the S-Class LCD should not differ by more than 3kPa.

A consecutive failure to achieve the above conditions after adjustment indicates that one or more of the foll components may be faulty;

- **Chamber thermocouple.**
- **Pressure sensor.**
- **Pressure interface board.**
- **Controller board (Thermocouple amplifier or A to D converter).**

10. When the calibration is complete, press the STOP button on the control box and wait for the beeps to signal the cassette may be removed. Press the STOP button again to reset the unit.
11. Recalibrate the steam generator thermocouple. See *Steam generator thermocouple calibration*.
12. To remove the RTD, loosen the compression nut and carefully pull it out. The tip is extremely sensitive and should never be subjected to any impact as this may damage the RTD or reduce its accuracy.
13. To disconnect the pressure tubing push the sleeve on the body of the quick connect forward.

Document Change Record

Document Number: 96-103929		Title: Calibration	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added S-class calibration information and changed title to calibration	99-0059

Microswitch Removal and Replacement

Removing the Microswitch

To remove the microswitch, follow these steps (see Figure 1):

1. Turn the power switch OFF, and unplug the unit.
2. Disconnect the microswitch leads (1) from the Controller Board (2) block terminal positions labelled CASSIN and carefully cut the cable ties securing the microswitch leads.
3. There may be RTV silicone sealant on the heads of the two screws securing the microswitch (4) to the side of the probe bracket (5). Trim away the excess RTV silicone and remove the screws. Retain these screws for assembling the replacement microswitch to the probe bracket.
4. Remove the microswitch.
5. Remove all RTV silicone residue from the probe bracket surface.

Replacing the Microswitch

To replace the microswitch, follow these steps (see Figure 1):

1. Using the two screws (3) retained from the removal procedure, attach the replacement microswitch to the probe bracket.
2. Connect the microswitch leads (1) to Controller Board (2) block terminal positions labelled CASSIN. The red wire is inserted into CASSIN-1 and the blue wire is inserted into CASSIN-2. Secure the stripped leads.
3. Route the microswitch leads the same as before and secure with new cable ties.
4. Plug-in the power cord and turn the power switch ON. When the unit is powered ON and the cassette is inserted, the solenoid valve is activated. Carefully insert the cassette.

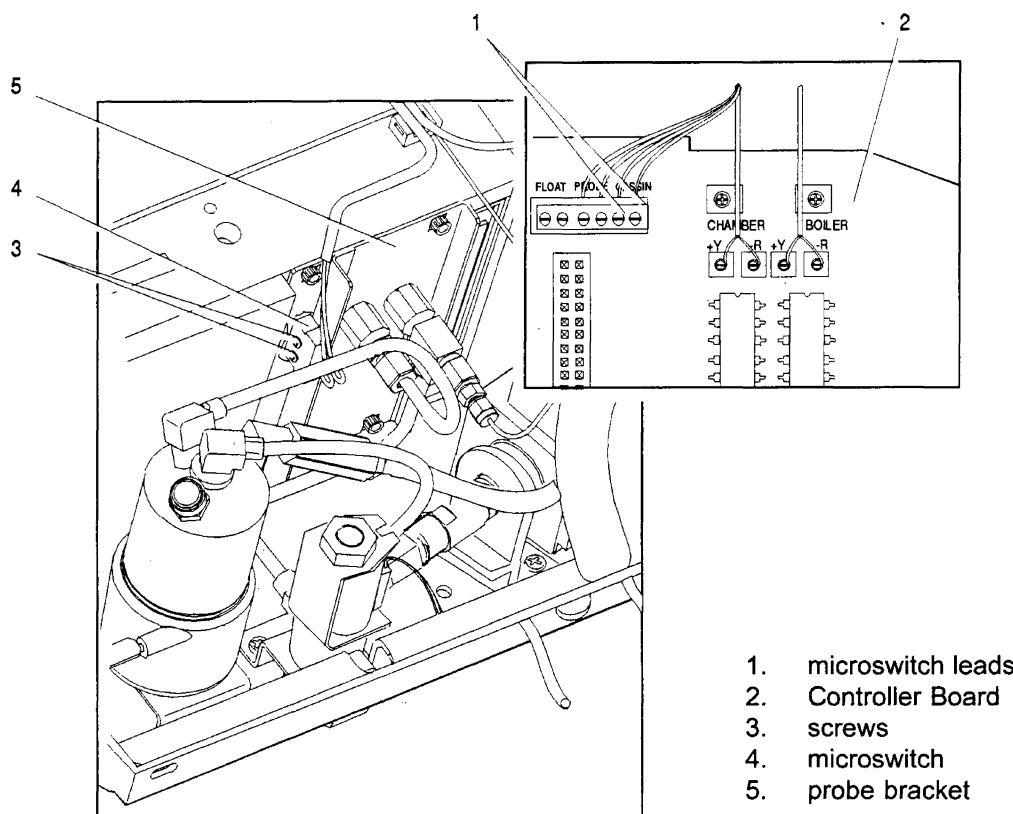
If the solenoid valve "clicks" before the cassette is fully inserted, the microswitch needs to be adjusted. If the solenoid valve does not "click" after the cassette is fully inserted the microswitch needs to be adjusted or it is defective.

OR

Using a multimeter set at continuity, touch the meter probes across Controller Board terminal positions labelled CASSIN-1 and CASSIN-2. If continuity is achieved before the cassette is fully inserted, the microswitch needs to be adjusted. If continuity is not achieved after the cassette is fully inserted the microswitch needs to be adjusted or it is defective.

If adjustment is required, power the unit OFF. Remove the screws securing the microswitch to the probe bracket and remove the microswitch. Using fine needle-nose pliers, adjust the activation point of the switch by carefully bending the microswitch arm. Reinstall and re-test the switch.

5. Once installed and functioning, apply a thin bead of RTV silicone sealant along the edges of the microswitch that are in contact with the probe bracket.



1. microswitch leads
2. Controller Board
3. screws
4. microswitch
5. probe bracket

Figure 1

Document Change Record

Document Number: 96-103918		Title: Microswitch	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S and changed font to Arial	99-0059

Compressor

Some STATIM L / 5000/ 5000S units have been manufactured with an additional bacteria-retentive air filter.

Units **without** the bacteria-retentive air filter draw air through the cylindrical filter at the back of the unit, into the compressor and into the steam generator via the check valve.

Units **with** the bacteria-retentive air filter draw air through the cylindrical filter at the back of the unit, into the compressor, through the bacteria-retentive air filter and into the steam generator via the check valve.

Please note the differences in disassembly and assembly procedures.

To remove the cover, see *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Removing and Inspecting the Compressor

To remove and inspect the compressor, follow these steps (see Figure 1):

1. Turn the power switch OFF, and unplug the unit.

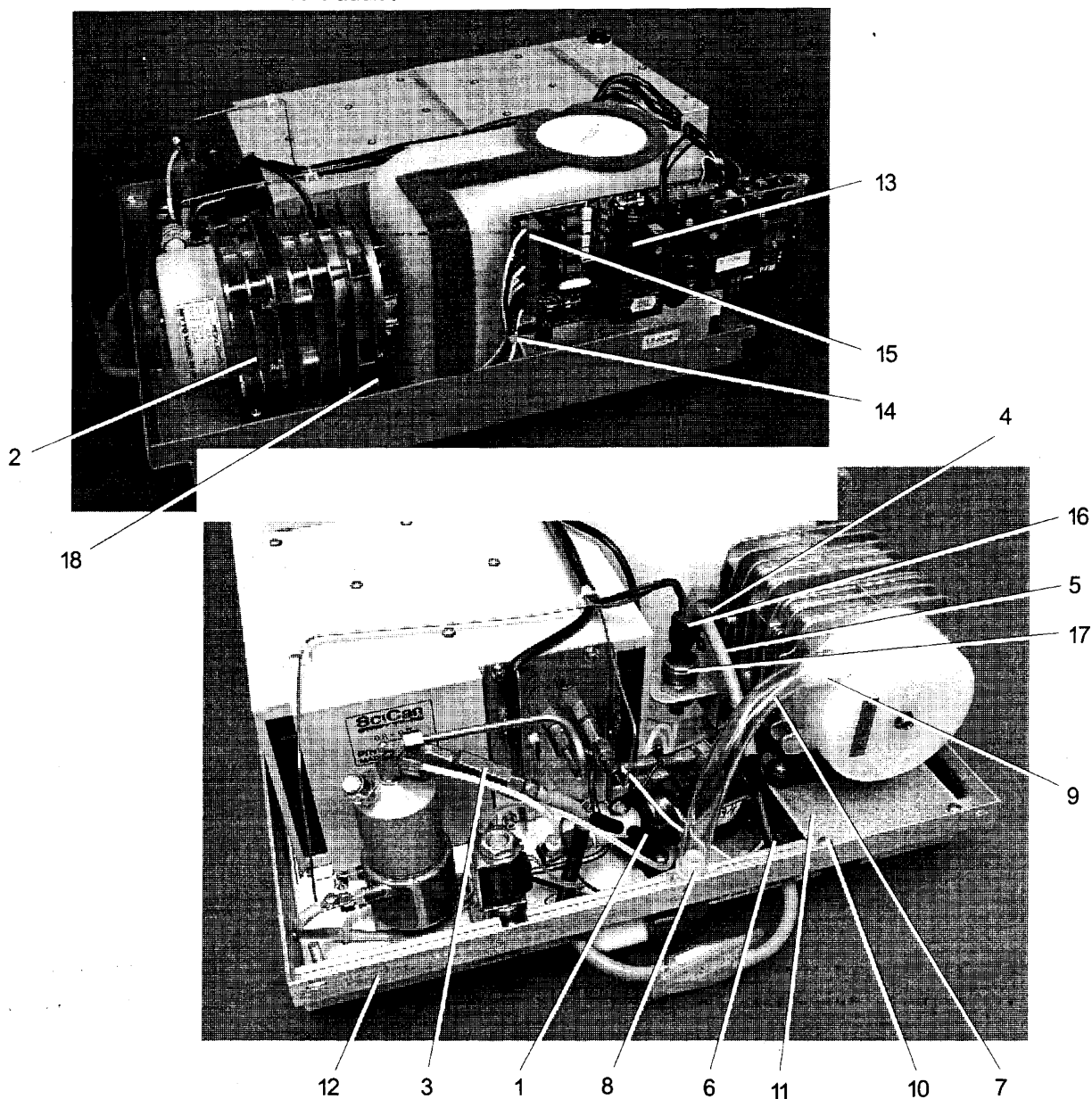
With the cylindrical air filter only :

- 2A. Locate the rubber tube (1) which extends from the compressor (2) to the steam generator check valve (3). Disconnect the compression nut (4) securing the tube to the compressor and remove the tube from the fitting.

With the additional bacteria-retentive filter :

- 2B. Locate the rubber tube (5) which extends from the compressor (2) to the input side of the bacteria-retentive filter (6). Disconnect the compression nut (4) securing the tube to the compressor and remove the tube from the fitting.
3. Locate the transparent rubber tube (7) which extends from the compressor intake fitting to the air filter fitting (8). Cut the cable tie (9) securing the tube to the compressor and remove the tube from the fitting.
4. Remove the four screws (10) that attach the compressor bracket (11) to the chassis (12). Retain the screws. Some compressor brackets may appear slightly different than the bracket you are servicing. Use the bracket that accompanies the replacement compressor.
5. Disconnect the leads from Controller Board (13) terminal block positions J1-9 LINE and J1-10 NEUTRAL, and carefully cut the cable (14) securing the compressor leads (15).
6. If present, disconnect the transducer connector (16) from the transducer (17).
7. Disconnect the ground wire (18) from the compressor body and remove the compressor from the unit.

With the additional bacteria-retentive filter



1. Rubber Tube (cylindrical air filter only)
2. Compressor
3. Steam Generator Check Valve
4. Plastic Compression Nut
5. Rubber Tube (with bacteria-retentive air filter)
6. Bacteria-retentive Filter Input

7. Transparent Rubber Tube
8. Air Filter Fitting
9. Cable Tie
10. Mounting Screws
11. Compressor Bracket
12. Chassis
13. Controller Board
14. Cable Ties
15. Compressor Leads
16. Transducer Connector
17. Transducer
18. Ground Wire

Figure 1

Replacing the Compressor

SciCan recommends that the check valve be replaced when the compressor is replaced. See, *Steam Generator Removal, Cleaning and Replacement of the Steam Generator Check Valve*.

To replace the compressor, follow these steps (see Figures 1 and 2):

1. Connect the ground wire (18) to the compressor body.
2. Position the compressor/bracket assembly (11) in the chassis (12). Route the compressor leads (15) with the bundle of wires leading to the Controller Board (13). Connect the black lead to Controller Board terminal block position J1-9 LINE and the white wire to terminal block position J1-10 NEUTRAL.
3. Bundle the wires together and secure them using nylon cable ties (14) every 2-3 inches.
4. Reinstall the four screws (13) retained during disassembly. Do not cut wires or tubes.
5. Reconnect the pressure transducer connector (16) to the transducer (17), if present.
6. Connect the transparent rubber tube (8) which extends from the compressor intake fitting to the air filter fitting (6). Secure the tube using a nylon cable tie (9).



With the cylindrical air filter only (see Figure 1):

- 7A. Connect the rubber tube (1) which extends from the top of the compressor (2) to the steam generator check valve (3). Secure the tube using the plastic compression nut (4).

With the additional bacteria-retentive filter (see Figure 2):

- 7B. Connect the rubber tube (5) which extends from the top of the compressor (2) to the input side of the bacteria-retentive filter (6). Secure the tube at the compressor end with the plastic compression nut (4).
8. Test the compressor by activating the compressor switch on the Control Box. See, *Required Information and Tools, the Control Box*.
9. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STAT/ML / 5000/ 5000S unit. See *Required Information and Tools*.
10. Reinstall the cover. See *STAT/ML / 5000/ 5000S Cover Removal and Replacement*.



Document Change Record

Document Number: 96-103921		Title: Compressor	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	97.12.05	Figure 1 line art replaced with photo. Figure 2 removed. Text added to indicate possible presence of transducer hardware.	98-029
3.0	99.04.14	Added 5000S	99-005

Reservoir



THE STATIM L / 5000/ 5000S IS HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING THE UNIT.

Removing the Reservoir

To remove the reservoir (1), follow these steps (see Figure 1):

1. Drain the reservoir using the drain tube (2) on the bottom of the unit. See *Draining the Reservoir*.
2. Remove the compressor / bracket assembly (3). See, *Compressor Removal and Installation*. Retain all screws.
3. Cut the necessary cable ties and remove the reservoir sensor lead (4) from Controller Board (5) terminal positions labelled PROBE.
4. Cut the cable tie (6) securing the reservoir supply tube (7) to "T"-fitting (8) located beneath the compressor / bracket assembly and remove the tube from the fitting.
5. Locate and remove three nylon cap nuts with washers (9) on the bottom of the chassis securing the reservoir. Retain the cap nuts and washers.
6. Carefully remove the reservoir from the chassis.

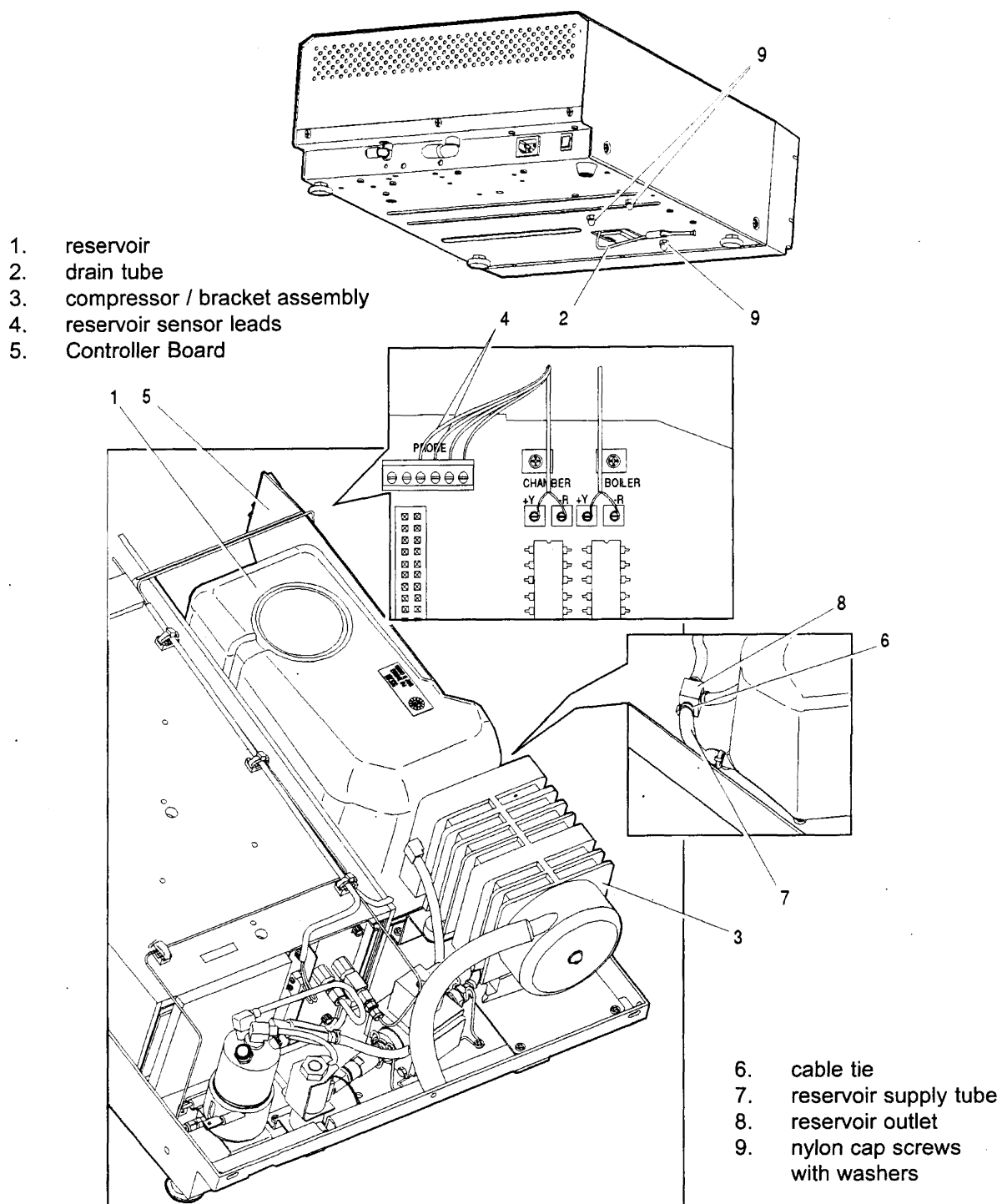


Figure 1

Replacing the Reservoir



THE STATIM L / 5000/ 5000S IS HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING THE UNIT.

To replace the reservoir, follow these steps (see Figure 1):

1. Carefully place and secure the reservoir (1) in the chassis using the three retained nylon cap nuts with washers (9). Do not pinch or obstruct the drain tube (2).
2. Reconnect the reservoir supply tube (7) to the "T"-fitting (8). Secure tube using a cable tie (6).
3. Fill the reservoir with steam-process distilled water. Touch the leads of the water quality sensor assembly to an earthed point to discharge static electric charge which may have built up on the reservoir during shipping. This reduces the chance of damaging the Controller Board with ESD.
4. Connect the water quality sensor leads (4) to Controller Board (5) terminal positions labelled PROBE J4-3 and J4-4.
5. Reinstall the compressor / bracket assembly (3). See, *Compressor Removal and Installation*. A dielectric strength test (Hi-Pot) and protective bonding impedance test (ground continuity) MUST be performed on the STATIM L / 5000/ 5000S unit. See *Required Information and Tools*.
6. Bundle the reservoir sensor leads, the microswitch leads and the thermocouple leads together and secure them using cable ties every 2-3 inches. Secure the bundle to the top of the armature using the clamps provided.
7. Reinstall the cover. See, *STATIM L / 5000/ 5000S Cover Removal and Replacement*.



Document Change Record

Document Number: 96-103926		Title: Reservoir	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-005



Armature

STAT/ML / 5000/ 5000S UNITS ARE HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING A UNIT.

Removing the Armature

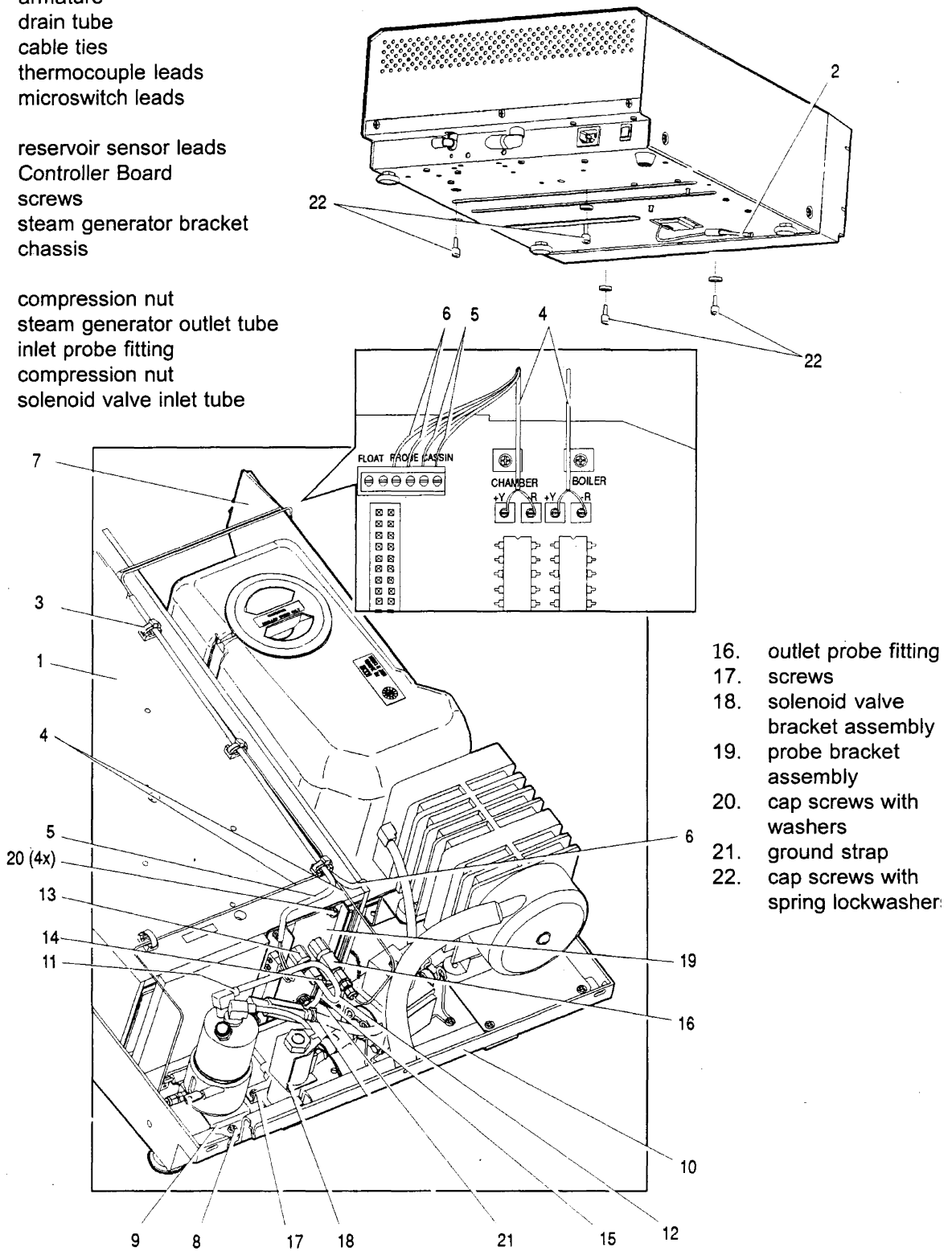
To remove the armature (1), follow these steps (see Figure 1):

1. Use the drain tube (2) to drain the reservoir. See, *Draining the Reservoir*.
2. Carefully cut the cable ties (3) securing the thermocouple leads (4), the microswitch leads (5) and the reservoir float sensor leads (6).
3. Remove the microswitch leads from Controller Board (7) terminal positions labelled CASSIN.
4. Loosen the two screws (8) holding the steam generator bracket (9) to the chassis (10).
5. Disconnect the compression nut (11) holding the steam generator inlet tube (12) to the inlet probe fitting (13).
6. Disconnect the compression nut (14) holding the solenoid valve inlet tube (15) to the outlet probe fitting (16).
7. Loosen the two screws (17) that attach the solenoid valve bracket assembly (18) to the chassis.
8. The probe bracket assembly (19) is held by four cap screws with washers. Remove all screws (20) with washers using a 9/64 inch ball end Allen key. Note the ground strap (21) attached to the bottom right of the probe bracket by the cap screw.
9. CAREFULLY bend the thermocouple leads away from the armature
10. Tilt the unit on its side so that the reservoir is towards the ceiling. Remove the four cap screws with spring lockwashers (22) securing the armature to the chassis: two at the front on the bottom of the chassis and two at the rear on the bottom of the chassis.
11. Lift the armature from the chassis. DO NOT DAMAGE THE THERMOCOUPLES IN THE PROBE BRACKET ASSEMBLY.



1. armature
2. drain tube
3. cable ties
4. thermocouple leads
5. microswitch leads
6. reservoir sensor leads
7. Controller Board
8. screws
9. steam generator bracket
10. chassis

11. compression nut
12. steam generator outlet tube
13. inlet probe fitting
14. compression nut
15. solenoid valve inlet tube



16. outlet probe fitting
17. screws
18. solenoid valve bracket assembly
19. probe bracket assembly
20. cap screws with washers
21. ground strap
22. cap screws with spring lockwasher

Figure 1

Replacing the Armature



STATIM L / 5000/ 5000S UNITS ARE HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING A UNIT.

To replace the armature (1), follow these steps (see Figure 1):



1. Align the armature (1) with the chassis (10) and partially insert the four cap screws with spring lockwashers (22) retained from the removal procedure. BE CAREFUL NOT TO CROSS-THREAD THE CAP SCREWS IN THE TAPPED HOLES OF THE ARMATURE. BE CAREFUL NOT TO DAMAGE THE THERMOCOUPLES IN THE PROBE BRACKET ASSEMBLY OR DAMAGE THE GROUND STRAP.
2. Install the probe bracket assembly (19). Partially insert the two bottom screws and attach the ground strap (21) to the bottom right hand position of the probe bracket assembly before proceeding with the rest of the installation.
3. When the lower screws securing the probe bracket assembly are installed, tighten the cap screws with washers holding the armature to chassis.
4. CAREFULLY bend the thermocouple leads back into position.
5. Complete installation of the probe bracket assembly. See *Probe Bracket and Chamber Thermocouple Removal and Replacement, Replacing the Probe Bracket Assembly and Aligning the Probe Bracket Assembly*.
6. Secure the solenoid valve assembly. See *Solenoid Valve Removal, a Installation, Installing the Solenoid Valve*.
7. Bundle the microswitch leads (5), thermocouple leads (4) and the water quality sensor leads (6) together using cable ties every 2-3 inches. Secure the wires to the top of the armature using the cable tie anchors provided on top of the armature.
8. A dielectric strength test (Hi-Pot) and a protective bonding impedance (ground continuity) must be performed on the STATIM L / 5000/ 5000S. See *Required Information and Tools*.
9. Check that the bubble level (19) on the front right top corner of the armature is not damaged and that the bubble moves freely.
10. Refill the reservoir using steam process distilled water and prime the pump. See *Pump Removal Testing and Replacement, Priming the Pump*.
11. Run an *unwrapped cycle* and observe all fittings, tubes and LCD read-outs.
12. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.



Document Change Record

Document Number: 96-103927		Title: Armature	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-005



Isoplate Removal and Replacement

STATIM L / 5000/ 5000S UNITS ARE HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING A UNIT.

Removing the Isoplate

The isoplate is an insular plastic box designed to hold the cassette in the armature. To remove the isoplate (1), from inside the armature (2) follow these steps (see Figure 1):

1. Remove the armature from the chassis and place it on a secure work surface. See the chapter, *Armature, Removing the Armature*.
2. Remove the three screws (3) securing the bubble level (4) to the bubble level base (5) on the front right corner of the armature. (The bubble level obscures a fastener that must be removed.)
3. The drain tube (6) passes through the armature and is attached to the isoplate. Using a pair of pliers, pull the drain tube off and discard the used tube. A new tube is supplied with the isoplate replacement.
4. The isoplate is secured in the armature using screws with washers on the top and bottom of the armature. Remove and retain all the screws with washers.
3. When all fasteners are removed, slide the isoplate out of the armature. Discard the isoplate.



Replacing the Isoplate

STATIM L / 5000/ 5000S UNITS ARE HEAVY. EXERCISE CAUTION AND SEEK ASSISTANCE WHEN LIFTING OR CARRYING A UNIT.



To reinstall the isoplate (1) in the armature (2), follow these steps (see Figure 1):

1. Slide the isoplate into the armature. Note the orientation of the probe bracket opening in the back wall of the isoplate. Reinstall the screws with washers (7) but do not tighten the screws. When all the screws are reinstalled, slide the cassette (9) into the isoplate. Now tighten the screws.
2. Install the new drain tube (6) and secure using LM113 Locktite™.
3. Reinstall the armature in the chassis. Follow the procedures described in the chapter, *Armature, Replacing the Armature*.

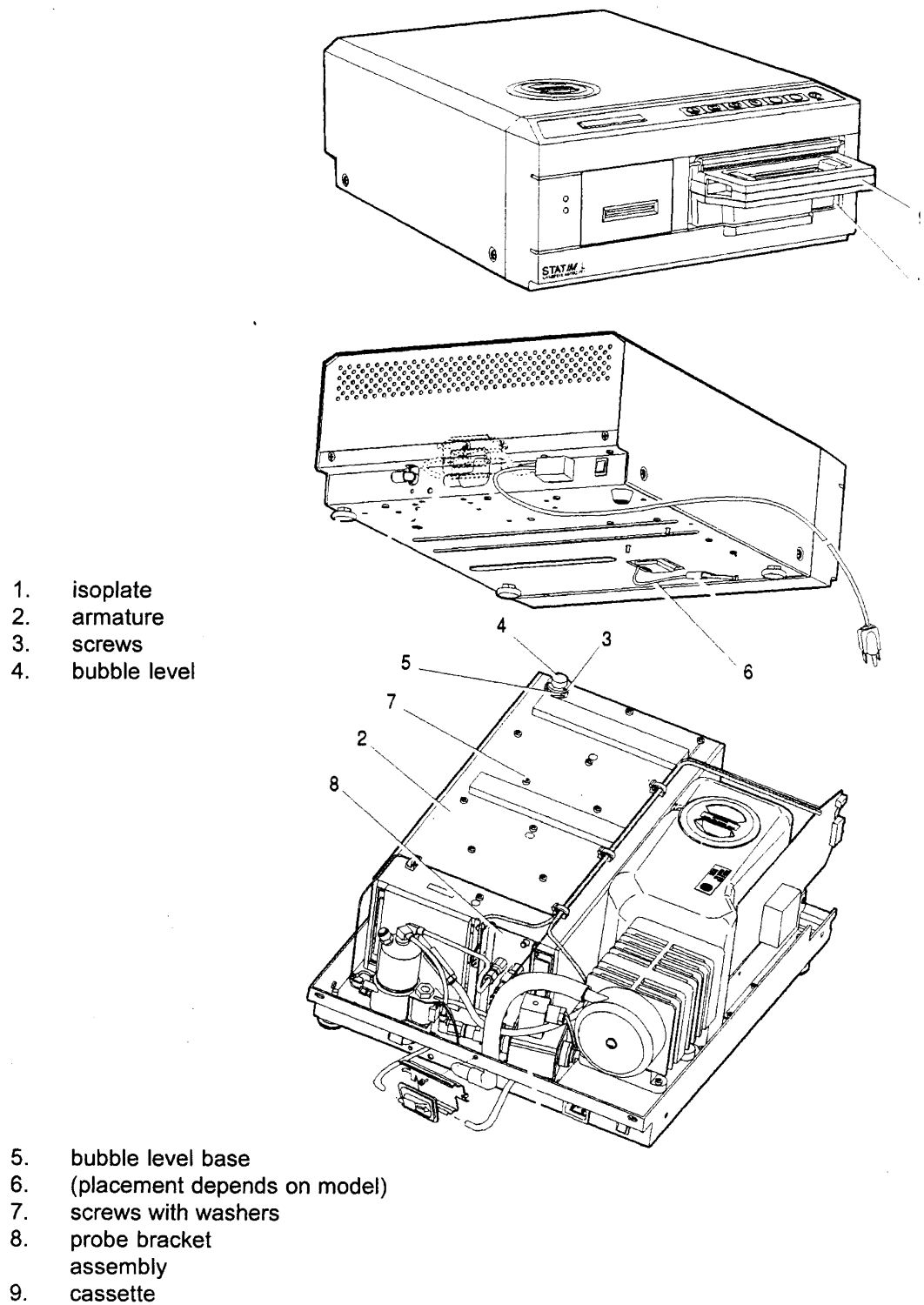
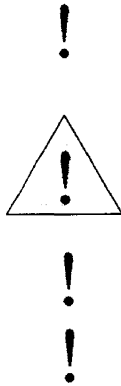


Figure 1



4. Reinstall the bubble level (4) to the bubble level (5) base using the three screws (3) retained from disassembly.
5. Before reinstalling the probe bracket assembly (8) to the back of armature, ensure that all traces of the old probe bracket gasket removed from the bracket. A new gasket comes attached to the replacement isoplate.
6. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STATIM L / 5000/ 5000S unit. See *Required Information and Tools*.
7. Refill the reservoir with steam process distilled water and prime the pump. See *Pump Removal Testing and Replacement, Priming the Pump*.
8. Recalibrate the thermocouples. See *Thermocouple Calibration*.
9. Plug in the power cord and power the unit ON. Run an *unwrapped cycle* and observe all fittings, tubes and LCD read-outs.
10. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Document Change Record

Document Number: 96-103937		Title: Isoplate Removal and Replacement	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Added 5000S	99-005

STATIM L / 5000/ 5000S Cover Removal and Replacement

Removing the Cover:

To remove a STATIM L / 5000/ 5000S cover, follow these steps (see Figure

1. Inspect the cover (1) to ensure that it has not been damaged in transit. Position the unit on the bench so the front leveller feet are securely on the work surface and the front cover extends past the work surface edge.
2. Check that the LCD (2) and keypad (3) function. This requires that the unit be powered ON. CHECK FOR SYMPTOMS OF THE FAILURE. ENSURE THAT NO FURTHER DAMAGE OCCURS.
3. Unplug the power cord (4) from the wall outlet and remove the cassette from the unit.
4. Remove the reservoir cap (5) from the top of the unit.
5. Remove seven screws from the cover; first remove two on each side (6) and then three with lockwashers (7) at the rear of the unit, using Phillips screwdriver.

Certain STATIM L / 5000 / 5000S units are manufactured with a bacteria-retentive air filter (9) attached to the rear of the unit by a single screw. This filter must be disconnected and the bracket (10) removed before the cover can be removed. If the bacteria-retentive air filter is present follow the steps found in, *Changing STATIM L / 5000/ 5000S Air Filters* and remove the single screw securing the bracket first. Remove the screws on either side and remove the bracket. Retain the filter, screw and bracket for re-assembly.

6. Slowly, lift the rear portion of the cover upwards. When the cover is clear of the internal components, carefully slide the entire cover forward clear the front of the armature and unsupported Controller Board (8). Slowly pivot the cover the same way a book opens and place it next to the unit. The keypad and LCD are still accessible and the internal components are exposed.
THE CONTROLLER BOARD IS UNSUPPORTED AT THE FRONT OF THE UNIT. BE CAREFUL. THE KEYPAD AND LCD CABLES ARE SECURELY ATTACHED TO THE CONTROLLER BOARD.
7. Observe the orientation of the ribbon cable connections: disconnect printer connector from Controller Board header P2 (if optional printer present), the LCD connector from Controller Board header P3, and keypad connector from Controller Board header P4.
8. Replace the reservoir cap onto the top of the reservoir.

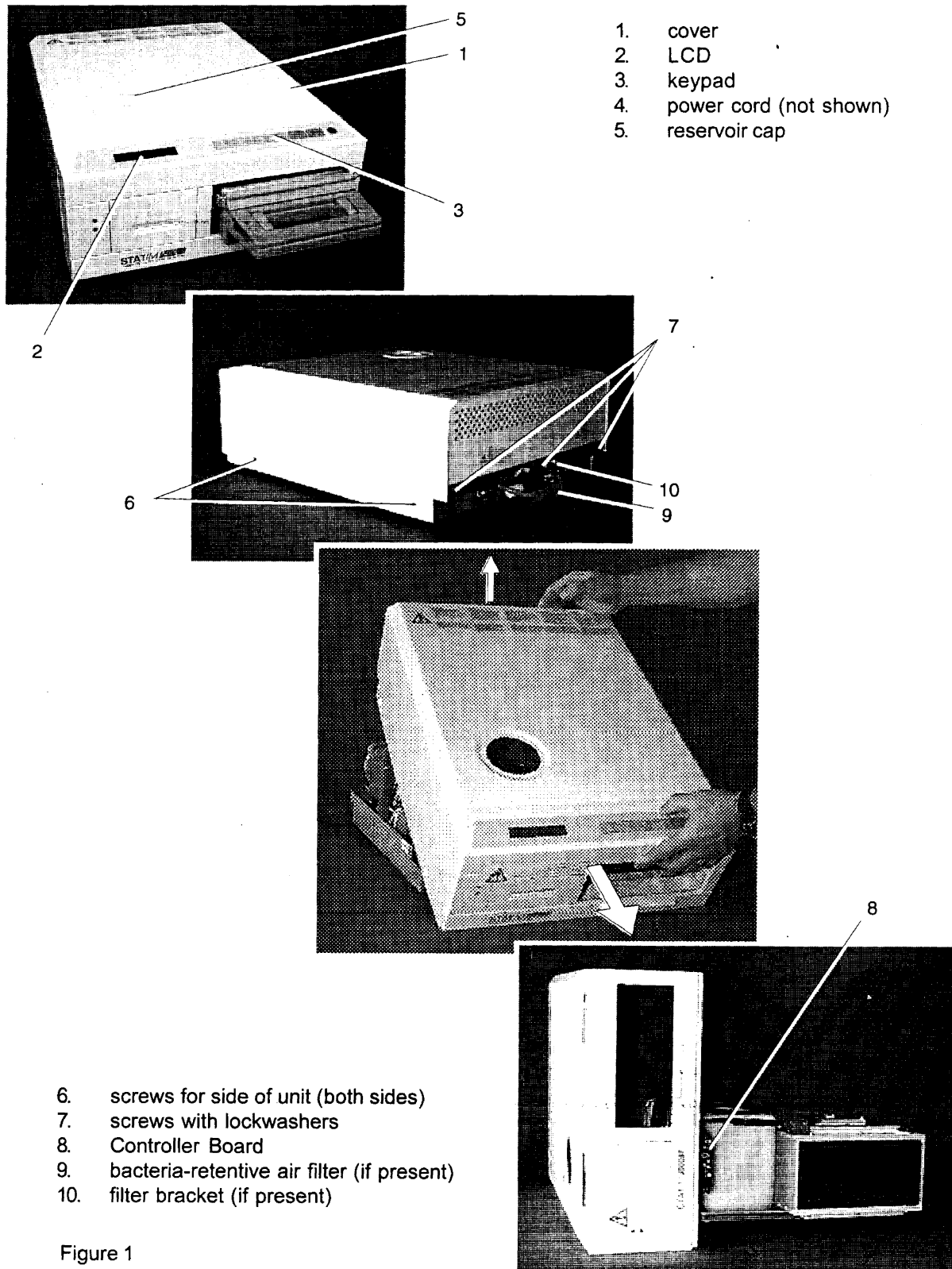


Figure 1

Reinstalling the Cover

To reinstall the cover follow these steps (see Figure 1).

1. Inspect the armature gasket located on the inside front portion of the cover. If it is damaged or fails to adhere to the surface of the cover, it must be replaced. See, *Replacing the Armature Gasket*.
2. Remove the reservoir cap (5) from the top of the reservoir.
3. Rest the cover (1) beside the left side of the unit. Reconnect the keypad connector to Controller Board header P4, the LCD connector to Controller Board header P3, and the printer to Controller Board header P2 (or the Pressure Interface board if installed), if the optional printer is installed.
4. Reconnect the power cord and power the unit ON to check that the LCD, Keypad and Printer are functioning. If the amber LED on the cover is flashing, or the solenoid valve is activated repeatedly, the LCD connector is incorrectly installed. Check that the Keypad connector is properly plugged onto the header. Select a cycle and wait for the proper display messages. After checking, turn the power switch OFF and unplug the power cord.
5. Carefully lift the cover from the work surface. While rotating the cover, slide it forward until the fascia clears the Controller Board and the top of the armature.
6. Tilt the front of the cover down and the rear of the cover upwards. Carefully reposition the front portion of the cover back over the front of the Controller Board (8) and armature. BE CAREFUL OF THE LEDs at the front left hand corner of the unit. These fit into the clearance hole in the cover. BE CAREFUL NOT TO PINCH THE RIBBON CABLES.
7. When the front of the cover is in place, lower the rear portion of the cover, and gently push backwards. Carefully realign the screw holes and re-insert three screws with lockwashers (7) across the rear of the unit.

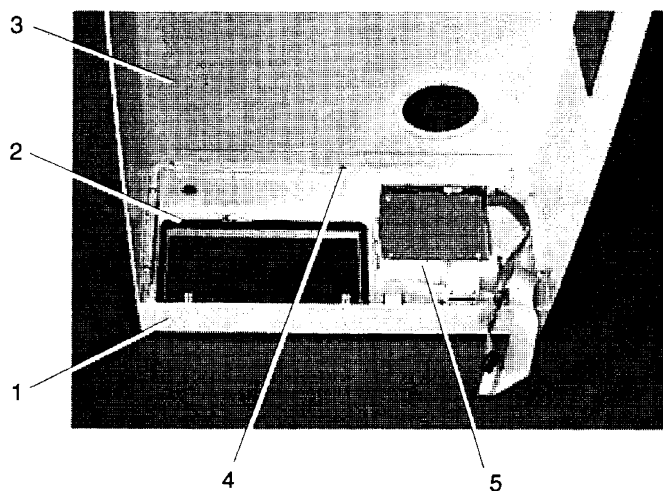
If the STATIM L / 5000/ 5000S being serviced has a bacteria-retentive air filter (9), re-insert the screws with lockwashers (7) on either side of the center screw hole before reinstalling the filter bracket (10). Follow the steps described in *Changing STATIM L / 5000/ 5000S Air Filters* to reinstall the biological filter.

8. Re-insert the four remaining screws (6), two on each side. Press firmly on the top of the cover to compress the gaskets and partially re-insert the screws as the holes align. When in place, tighten all the screws. Do not over tighten the screws.
9. Place the reservoir cap (5) back onto the reservoir.
10. Reconnect the power cord (4).

Replacing the Armature Gasket

To replace the armature gasket follow these steps (see Figure 2).

1. Remove all traces of the gasket and gasket adhesive from inside the fascia (1). The fascia is manufactured of polycarbonate plastic. **DO NOT USE AROMATIC SOLVENTS ON THE FASCIA.** This will damage the fascia. To prepare for installation of the new gasket (2), roughen the inside surface of the fascia using a fine grit sand paper.
2. Leave the carrier paper on the adhesive side of the gasket and perform a trial fit. Note that the widest part of the gasket fits at the bottom of the opening and that the gasket does not protrude into the opening.
3. Remove the carrier paper from the adhesive side of the gasket. Carefully install the gasket making sure it is seated firmly in place.



1. fascia
2. armature gasket
3. cover
4. plastite screw
5. printer module

Figure 2

Removing and Replacing the Fascia

!

THE FASCIA CONTAINS THE LCD, MEMBRANE KEYPAD AND PRINTER (if present).

!

STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLY IN STATIC-PROTECTED PACKAGING.

Removing the Fascia

To remove the fascia (1), follow these steps (see Figure 2):

1. The fascia is attached to the cover (3) using seven plastite screws (4). Remove and retain the screws.
2. A bead of silicon was used to provide a water-tight seal between the fascia and cover during manufacturing. Remove the fascia and any silicon residue remaining on the cover.
3. If a printer module (5) is installed it must be removed from the fascia. See, *Removing and Replacing the Printer*.
4. Discard the old fascia. The fascia is made of recycleable polycarbonate. Please recycle wherever possible.

Replacing the Fascia

To replace the fascia (1), follow these steps (see Figure 2):

1. If a printer module (5) was previously installed it must be reinstalled the fascia. See, *Removing and Replacing the Printer*.
2. Apply a bead of silicon between the fascia and cover (3) to provide a water-tight seal.
3. Install the new fascia using the seven screws (4) retained from the disassembly procedure.
4. Reinstall the cover. See, *STATIM L / 5000/ 5000S Cover Removal and Replacement*. Verify that the keypad, LCD and printer (if installed) function correctly.

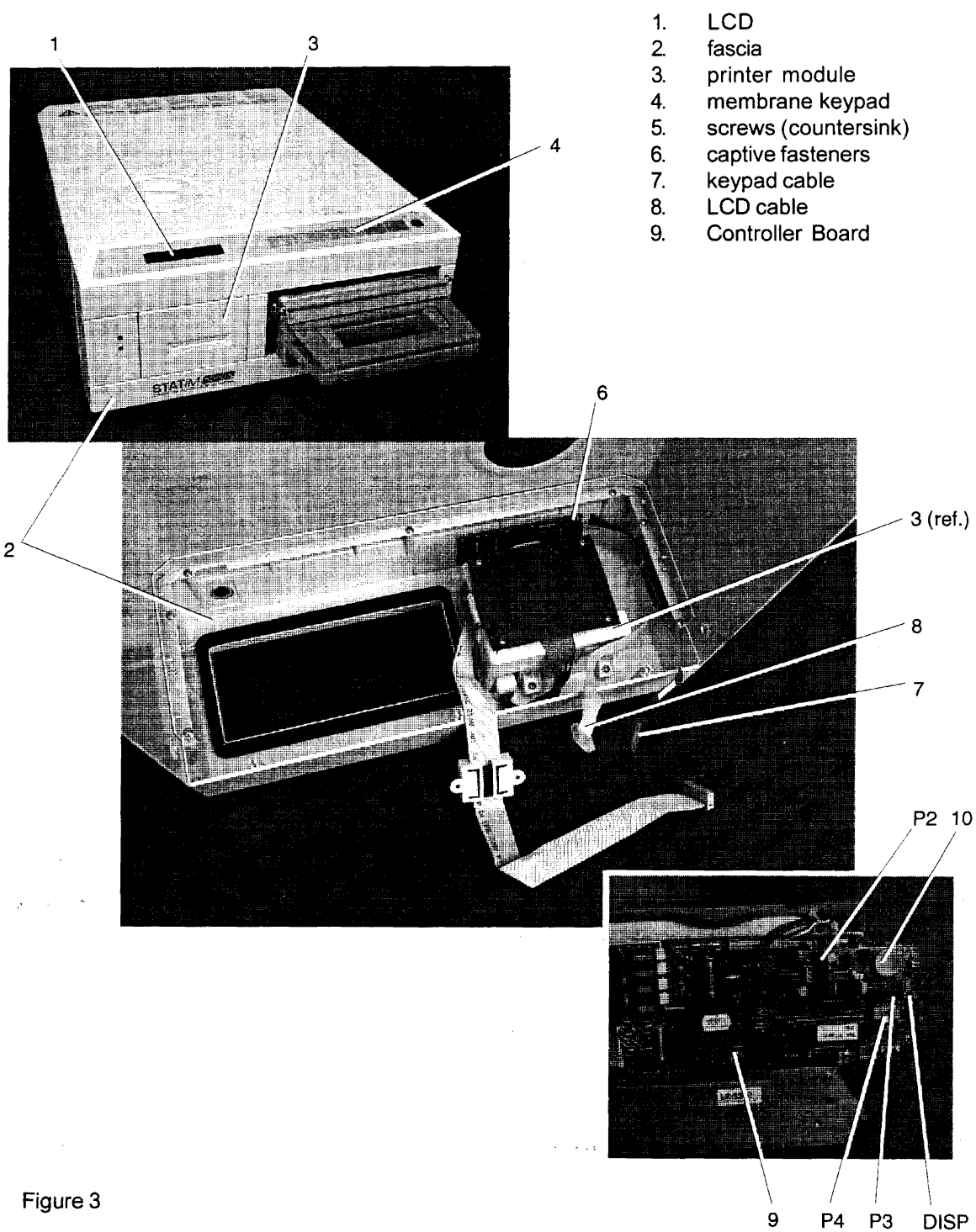


Figure 3

LCD Removal and Replacement

!

STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

Removing the LCD

To remove the LCD (1) from the fascia (2), follow these steps (see Figure 1):

1. If present, remove the printer module (3). See *Printer, Removing the Printer Module*.
2. Carefully remove the membrane keyboard (4) from the fascia. See *Membrane Keypad Removal and Replacement*.
3. Using a Phillips screw driver remove and retain the four countersink screws (5) securing the LCD to the fascia. Each screw is held by a cap fastener (6) which is integral to the LCD assembly.
4. The keypad cable (7) and the LCD cable (8) are secured together by double sided adhesive tape. Carefully separate the harnesses and remove the LCD.

Replacing the LCD

To replace the LCD (1), follow these steps (see Figure 3):

1. Align the captive fasteners (6) on the LCD with the four clearance holes in the fascia (2) and reinstall the LCD using the four countersink screws (5) retained from disassembly. The LCD cable (8) and keypad cable (7) are on the same side of the cover.
DO NOT PRESS DOWN IN THE MIDDLE OF THE LCD ASSEMBLY. APPLY PRESSURE IN THE AREAS IMMEDIATELY ADJACENT TO MOUNTING HOLES ONLY.
2. Carefully reinstall the membrane keyboard (4) on the fascia. See *Membrane Keypad Removal and Replacement*.
3. If present, reinstall the printer module (3). See *Printer, Replacing the Printer Module*.
4. Secure the cables together using double sided adhesive tape.
5. Connect the keypad connector to Controller Board (9) P4.
6. Connect the LCD connector to Controller Board P3.

!

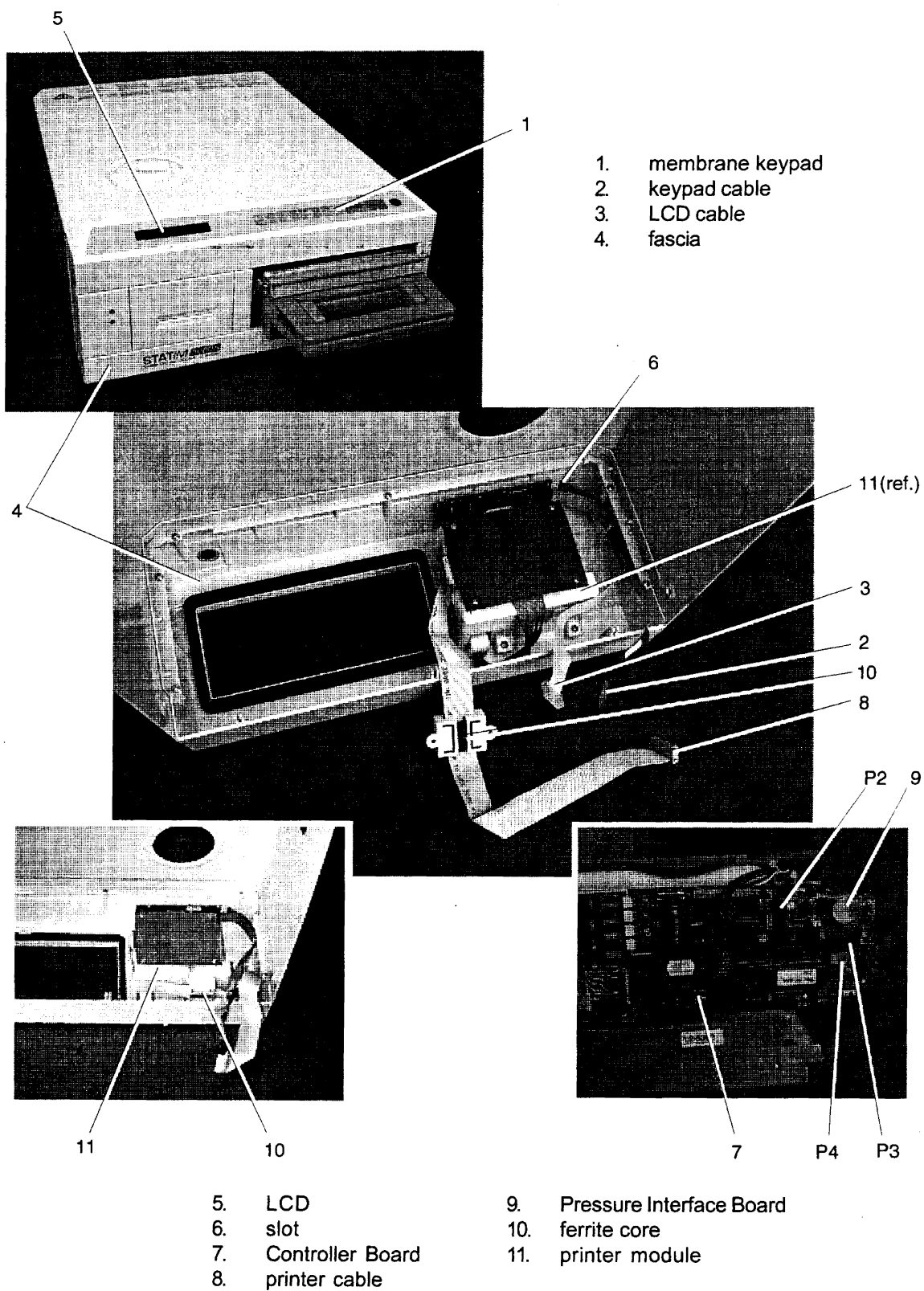


Figure 4

7. Connect the printer connector (if present) to Controller Board P2 or Pressure Interface Board (10) connector P2, if present.
8. Power the unit ON. If the LCD fails to display the "select a cycle" message, the microprocessor is improperly installed or the LCD intensity pot is not adjusted correctly. If the amber LED on the front cover is flashing, or the solenoid valve is activating repeatedly, the connector is incorrectly installed.
9. If the LCD intensity or contrast is not suitable, adjust the pot labeled either DIS or DISP, on the Controller Board.
10. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Membrane Keypad Removal and Replacement

!

STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

!

DO NOT OVER-BEND OR TWIST THE MEMBRANE KEYPAD.

Removing the Membrane Keypad

To remove the membrane keypad (1), follow these steps (see Figure 4):

1. The keypad flexible cable (2) and the LCD ribbon cable (3) are secured together with double sided adhesive tape. Carefully separate the cables.
2. Using a sturdy sharp instrument, carefully lift one corner of the membrane keypad and CAREFULLY peel the membrane keypad away from the fascia (4). EXERCISE CAUTION, there may be adhesive on the edges of the LCD (5). Pass the connector through the slot in the fascia.
3. Remove any residual adhesive or membrane from the recessed key area of the fascia.

Replacing the Membrane Keypad

To replace the membrane keypad (1), follow these steps (see Figure 4):

1. The replacement membrane keypad has carrier paper on the back to protect the adhesive. With the carrier paper in place, feed the keypad cable (2) connector through the slot (6) in the fascia (4).

2. Remove the carrier paper and align the bottom edge of the membrane keypad with the bottom edge of the recessed area on the fascia. Carefully lower the membrane into place while continuing to draw the keypad cable connector through the slot. With finger pressure only, press the membrane into place, eliminating air pockets under the membrane.
3. Secure the keypad cable and LCD cable together using dual sided adhesive tape.
4. Connect the keypad cable connector to Controller Board (7) P4.
5. Connect the right angle LCD cable connector to Controller Board P3.
6. Connect the printer cable (8) connector, if present, to Controller Board P2 or Pressure Interface Board (9) connector P2, if present. The printer cable in Figure 4 shows a ferrite core (10). This core may or may not be present. If present, the core must be attached to the wall of the printer module before replacing the cover.
7. Plug in the power cord and power the unit ON. To test each button on the keypad ensure that the cassette is not engaged, or that it is out of the unit. Select a cycle and press the START button. The LCD message reads, "INSERT CASSETTE". Repeat this step for each cycle to ensure the keypad is functioning properly.
To test the STOP button select a cycle. The LCD message indicates which cycle is selected. Press the STOP button. The LCD message reads "SELECT A CYCLE".
8. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Document Change Record

Document Number: 96-103914		Title: Cover Removal, Servicing and Replacing	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	98.01.23	Line art replaced with photos. Text changed to reflect possible presence of pressure transducer hardware and/or ferrite core.	98-0290
3.0	99.04.14	Added 5000S	99-0059

Printer



NEVER PULL PRINTER PAPER BACKWARDS THROUGH THE PRINT HEAD. THIS WILL DAMAGE THE PRINT HEAD.



WHEN TEARING OFF PRINTED PAPER FROM THE PRINTER, ALWAYS TEAR THE PAPER UPWARDS AGAINST THE TEETH TO ENSURE THAT THE PRINTER DOES NOT GET DAMAGED.



STATIM L / 5000 / 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

The printer cable connector is attached to Controller Board connector P2. If a Transducer Interface Board is present, the printer cable connector is attached to Transducer Interface Board connector P2. See, *Pressure Transducer*.

Some printer module assemblies are manufactured with a ferrite core assembly attached to the cable. If so, ensure the ferrite core is in place when the assembly is reinstalled. See, *Positioning the Ferrite Core*.

Removing the Printer Module

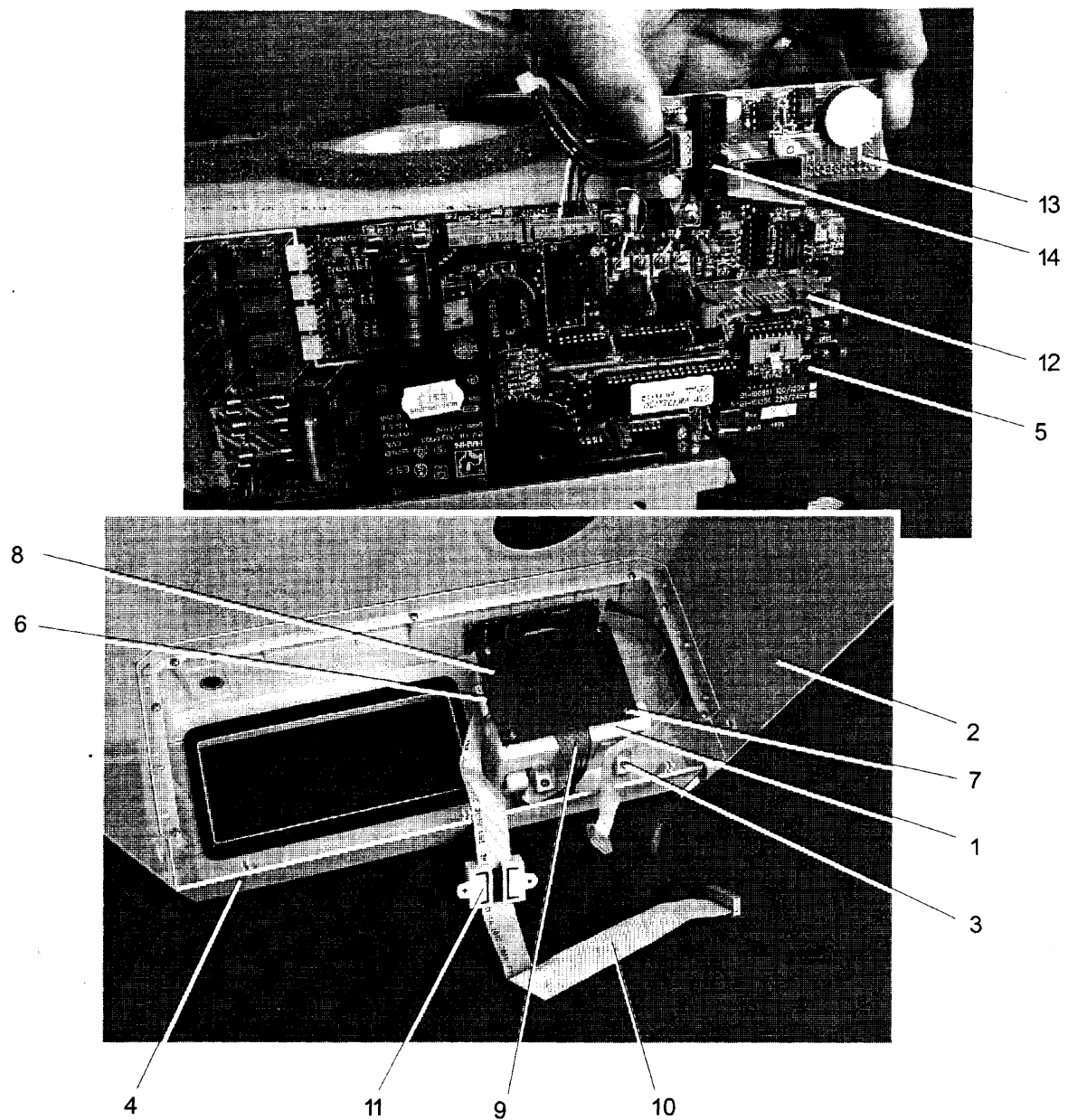
To remove the printer module assembly (1), follow these steps (see Figure 1):

1. Place the cover (2) on a clean work surface to avoid scratching the cabinet surface.
2. Remove four screws (3) securing the printer module assembly to the fascia assembly (4). Retain the screws.
3. Remove and place the printer face down on the work bench.

Replacing the Printer Module

To replace the printer module (1), follow these steps (see Figure 1):

1. Install the printer module assembly in the fascia assembly (4) using four screws (3) retained during disassembly.
2. If the module contains a new Printer Interface Board, or a new printer module, the print quality may require adjustment. See, *Adjusting Print Quality*. See *Printer Interface Board: Important Notes*.
3. Connect the printer cable connector to Controller Board (2) P2 connector. If a Transducer Interface Board is present, connect to Transducer Interface Board P2.
4. Connect the LCD cable connector to Controller Board P3.
5. Connect the keypad cable connector to Controller Board P4.



- | | |
|----------------------------|---|
| 1. printer module assembly | 8. Printer Interface Board shield |
| 2. cover | 9. Printer ribbon cable |
| 3. screws | 10. Printer Controller ribbon cable |
| 4. fascia assembly | 11. ferrite core |
| 5. Controller Board | 12. Controller Board P2 connector |
| 6. Printer Interface Board | 13. Pressure Interface Board |
| 7. #1 Phillips screws | 14. Pressure Interface Board P2 connector |

Figure 1

Removing the Printer Interface Board

To remove the Printer Interface Board (6) from the module, follow these steps (see Figure 1):

! STAT/ML / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

1. If detachable, disconnect the Printer Driver ribbon cable (9) and Printer Interface ribbon cable (10). See *Printer Interface Board: Important Notes*.
2. Using a #1 Phillips screwdriver, remove the four screws (7) from the Printer Interface Board. Retain the screws.
3. Remove and retain the Printer Interface Board and the Printer Interface Board shield (8). There may be four nylon spacers (not shown) between the board and the stand-offs. See *Printer Interface Board: Important Notes*.

Replacing the Printer Interface Board

To replace the Printer Interface Board, follow these steps (see Figure 1):

! STAT/ML / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

1. Connect the Printer Interface ribbon cable (10) to Printer Interface Board header P1. Cable assemblies may differ. If the connector is not polarized, note the orientation of Pin 1 of the connector and Pin 1 of the board.
2. Connect the Printer ribbon cable (9) connector to Printer Interface Board header P2.
3. Place the Printer Interface Board, component side down, on the module. Replace the Printer Interface Board shield (8) and insert the four screws (7) retained during disassembly.
4. If the Printer Interface Board has been repaired, or is a new Printer Interface Board, the print quality may require adjustment. See, *Adjusting Print Quality*. See *Printer Interface Board: Important Notes*.

Adjusting Print Quality

To remove the cover, see *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

!

STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

To alter print quality, the contrast adjustment pot (R21) located on the printer Interface Board must be adjusted. Follow these steps (see Figures 1 and 2):

1. Current versions of the Printer Interface Board have the printer contrast adjustment pot (R21) located at the edge of the board, and adjustments may be made using a small adjustment tool while the printer module is still in the fascia assembly. (See Figure 1.)
Earlier versions require that the Printer Interface board be removed from the back of the module before the pot is accessible. See, *Removing the Printer Controller Board and Printer Interface Board - Important Notes*.
2. To adjust and test print quality, turn the unit power switch ON. Open the printer module and enable the printer by pressing the printer power button (item 18, Figure 2). Start and then quickly stop a cycle. Doing so causes an error message to be printed. While the error message is printing, adjust the pot (R21).
3. If further adjustment is required, repeat steps 1 and 2. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Removing the Printer

To remove the printer assembly (1) from the printer module assembly (2), follow these steps (see Figure 2):

!

STATIM L / 5000/ 5000S PRINTED WIRING BOARDS AND MICROPROCESSORS ARE SENSITIVE TO STATIC ELECTRIC CHARGES. OBSERVE THE APPROPRIATE SAFEGUARDS FOR HANDLING AND SERVICING STATIC SENSITIVE PARTS.

1. Remove the printer module from the unit. See, *Printer Removal and Replacement, Removing the Printer Module*.
2. Remove the printer assembly from the printer module assembly. The printer assembly is held into the module by two hinge pins (3). The pin on the bottom left of the assembly sits in a recessed slot / retaining hole. The pin on the bottom right hand of the assembly is captured by a snap mechanism. Deflect the snap (4) away from the printer to free the hinge pin, and swing the assembly out of the module housing.

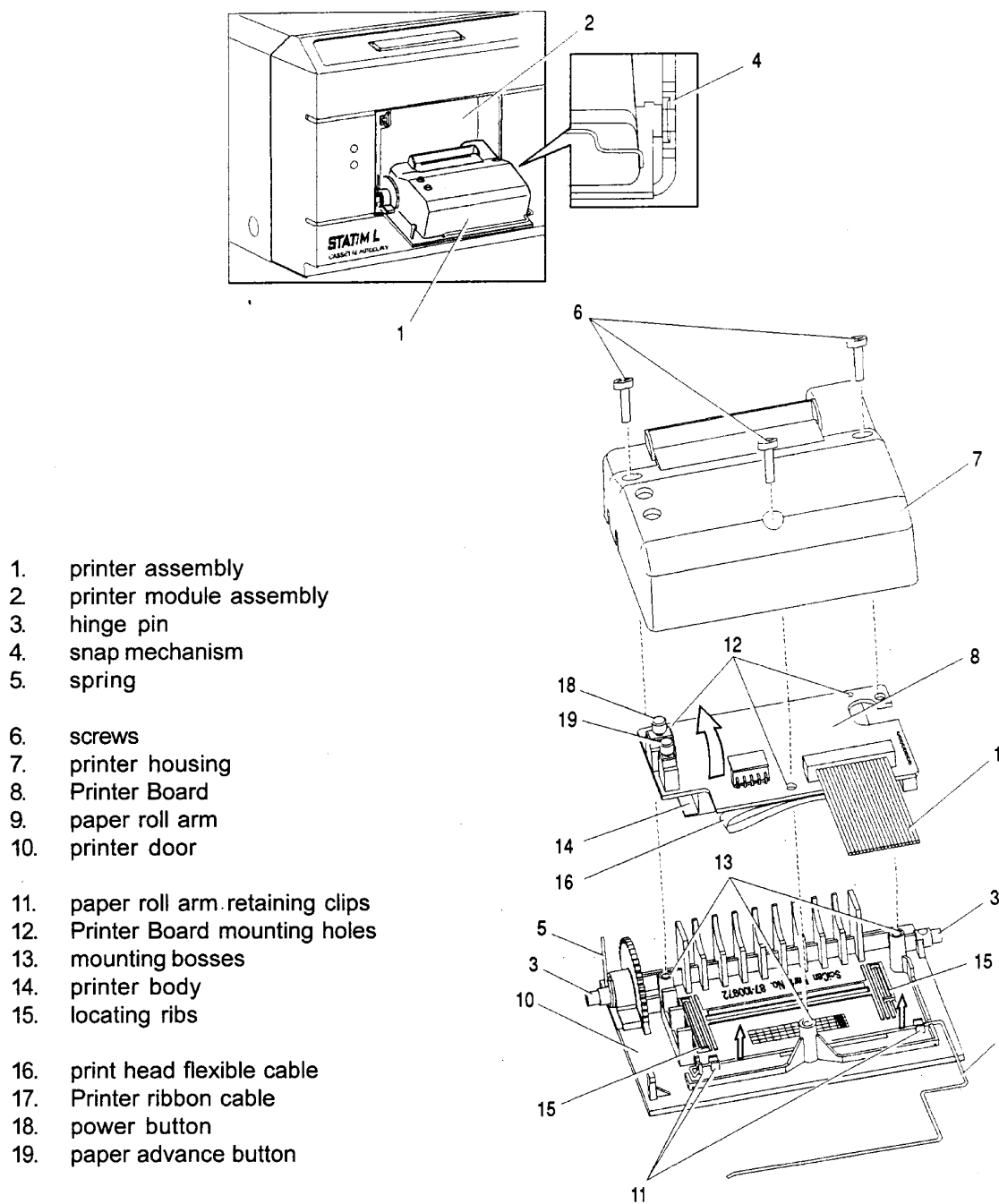


Figure 2



3. Remove the printer spring (5) from the left hand hinge pin and retain for re-assembly.
4. Using a #1 Phillips screwdriver, remove three screws (6) from the printer housing (7) and set them aside for use in re-assembling the printer.
5. Remove the housing. Note the orientation of the Printer Board (8) and the paper roll arm (9) assembled on the printer door (10).
6. GENTLY lift the Printer Board upwards and away from the printer door. EXERCISE CARE WHILE HANDLING THE BOARD. THE PRINTER IS INTEGRAL TO THE WIRING BOARD. DO NOT PLACE STRAIN ON THE CONNECTIONS OF THE RIBBON CABLE SOLDERED TO THE BOARD.
7. Remove the paper roll arm from the clips (11).
8. Carefully rest the Printer Board beside the assembly.

Replacing the Printer

To replace the printer, follow these steps (see Figure 2):



STATIM L / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

1. Carefully snap the paper roll arm (9), in the loading position, back into the clips (11) on the printer door.
2. Place the Printer Board (8) back into position on the printer door (10). Note the alignment of the printer board mounting holes (12) and the mounting bosses (13) on the printer door. The black plastic printer body (14) rests between the locating ribs (15) on the inside of the printer door.
3. Check that the print head flex cable (16) and Printer ribbon cable (17) are not pinched between the printer door and the wiring board.
4. Place the printer housing (7) on the printer door (10). Check again to be sure that the flexible cables are not pinched between the cover and the door. The power button (18) and the paper advance button (19) must protrude through the openings in the cover and operate freely.
5. Using a #1 Phillips screwdriver secure the printer housing to the printer door with the three screws (6) retained during the disassembly procedure. DO NOT OVER TIGHTEN THESE SCREWS.

6. Place the printer spring (5) on the left hand hinge pin of the printer assembly, with the long tang positioned to align with the long slot on module housing.
7. Place the left hand hinge pin in the recesses slot / retaining hole and align the long spring tang. Swing the right hand hinge pin towards module housing and push firmly onto the snap mechanism (4).
8. Connect the printer cable connector to Controller Board P2 or , if present, Pressure Interface Board P2. See, *Positioning the Ferrite Core*.
9. Connect the LCD cable connector to Controller Board P3.
10. Connect the keypad cable connector to Controller Board P4.
11. Power the unit ON. Load the thermal paper and test print. To test start and then quickly stop a cycle. See *Installing Paper Into the STATIM L / 5000/ 5000S Printer*.
12. Reinstall the cover. See *STATIM L / 5000/ 5000S Cover Removal and Replacement*.

Positioning the Ferrite Core

If the printer module assembly you are servicing was manufactured with a ferrite core assembled to the cable, the core must be present during reassembly. Position the core three to four inches from the printer module. Apply two sided adhesive tape to the core and carefully place it on the fascia paper shield on the back of the printer module so the cable is not unduly strained, but will still reach either the P2 connector on the Controller Board or the P2 connector on the Transducer Interface Board.

Printer Interface Board - Important Notes

1. In order to operate with version 1.1 STATIM Controller Boards, Printer Interface Boards version 2.0 and higher require the removal of jumper.
2. Nylon spacers are required for mounting version 1.1 Printer Interface Boards ONLY.
3. To adjust the print contrast potentiometer R21 on Printer Interface Boards versions prior to 2.0, the Printer Interface Board must be removed from the printer module assembly.
To adjust the print contrast potentiometer, R21, on Printer Interface Board version 2.0, the printer module assembly must be removed from the fascia.
To adjust the print contrast potentiometer, R21, on Printer Interface Board versions 2.1 and later, R21 is accessible with the printer module assembly installed in the fascia.

4. Setting the printer contrast too dark on version 1.1 Printer Interface Boards may cause the STAT/M L / 5000/ 5000S to reset while printing under low line-voltage conditions. If this problem occurs, adjust R21 to lighten the print contrast, or upgrade to a later revision of Printer Interface Board.
5. The cable connecting the Printer Interface Board to the STAT/M Controller Board is permanently soldered to the Printer Interface Board on all boards prior to version 2.2.
6. Some version 1.1 Printer Interface Boards were fabricated with a strain-relief on the connector attaching to STAT/M Controller Board position P2. The strain-relief must be removed before connecting to STAT/M Controller Board versions 2.0 and later.

Document Change Record

Document Number: 96-103925		Title: Printer	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	97.12.12	Figure 1 line art replaced with photo. Text changed to reflect attachment of keyboard cable to either Controller Board P2 or Transducer Interface Board P2.	98-0290
3.0	99.04.14	Added 5000S	99-0059

Printer Interface Board / Printer Board Schematics and Reference Drawings

!

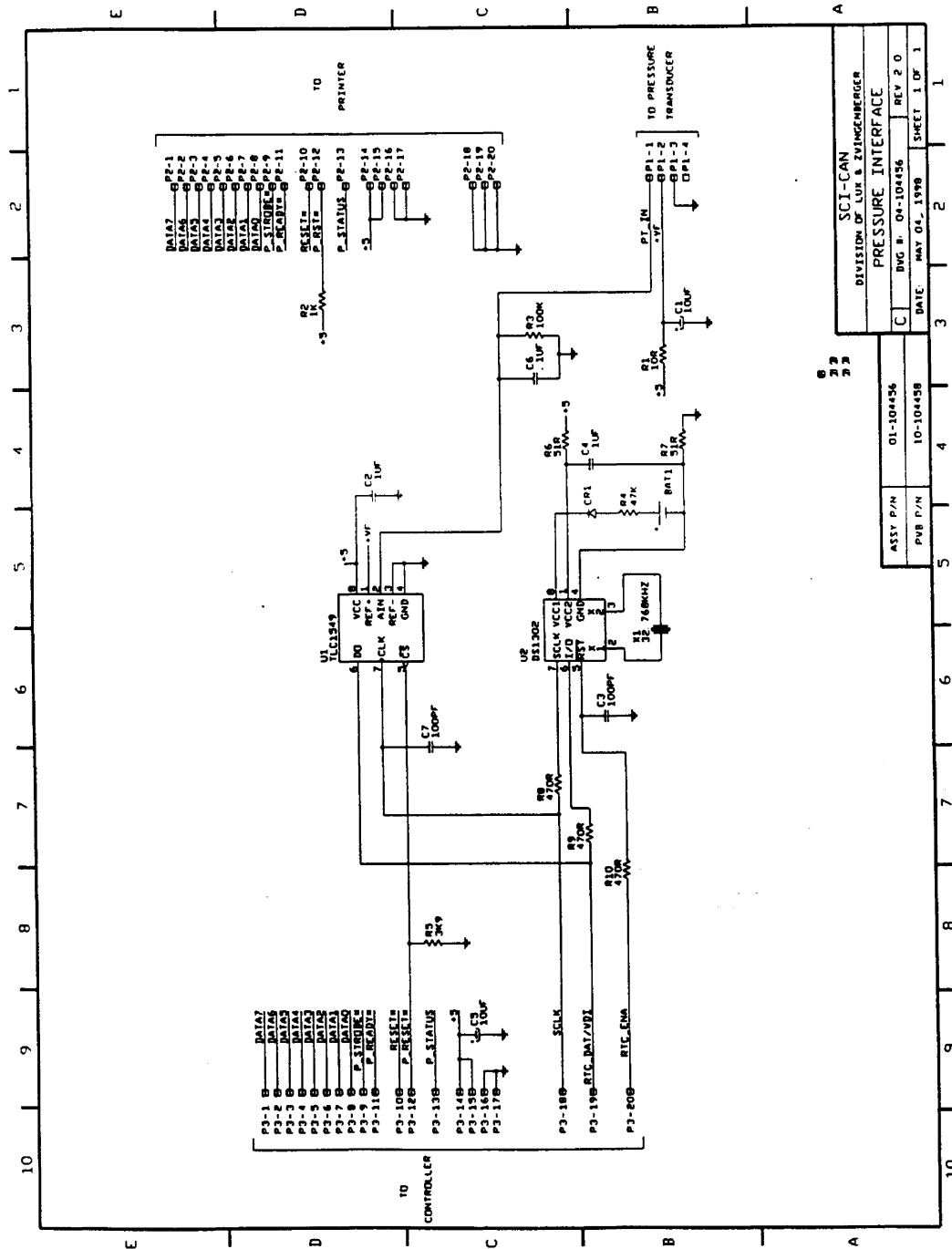
STAT/ML / 5000/ 5000S UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTRO-STATIC DISCHARGE (ESD). OBSERVE APPROPRIATE SAFEGUARDS WHEN SERVICING. ALWAYS TRANSPORT ELECTRONIC COMPONENTS AND ASSEMBLIES IN STATIC-PROTECTED PACKAGING.

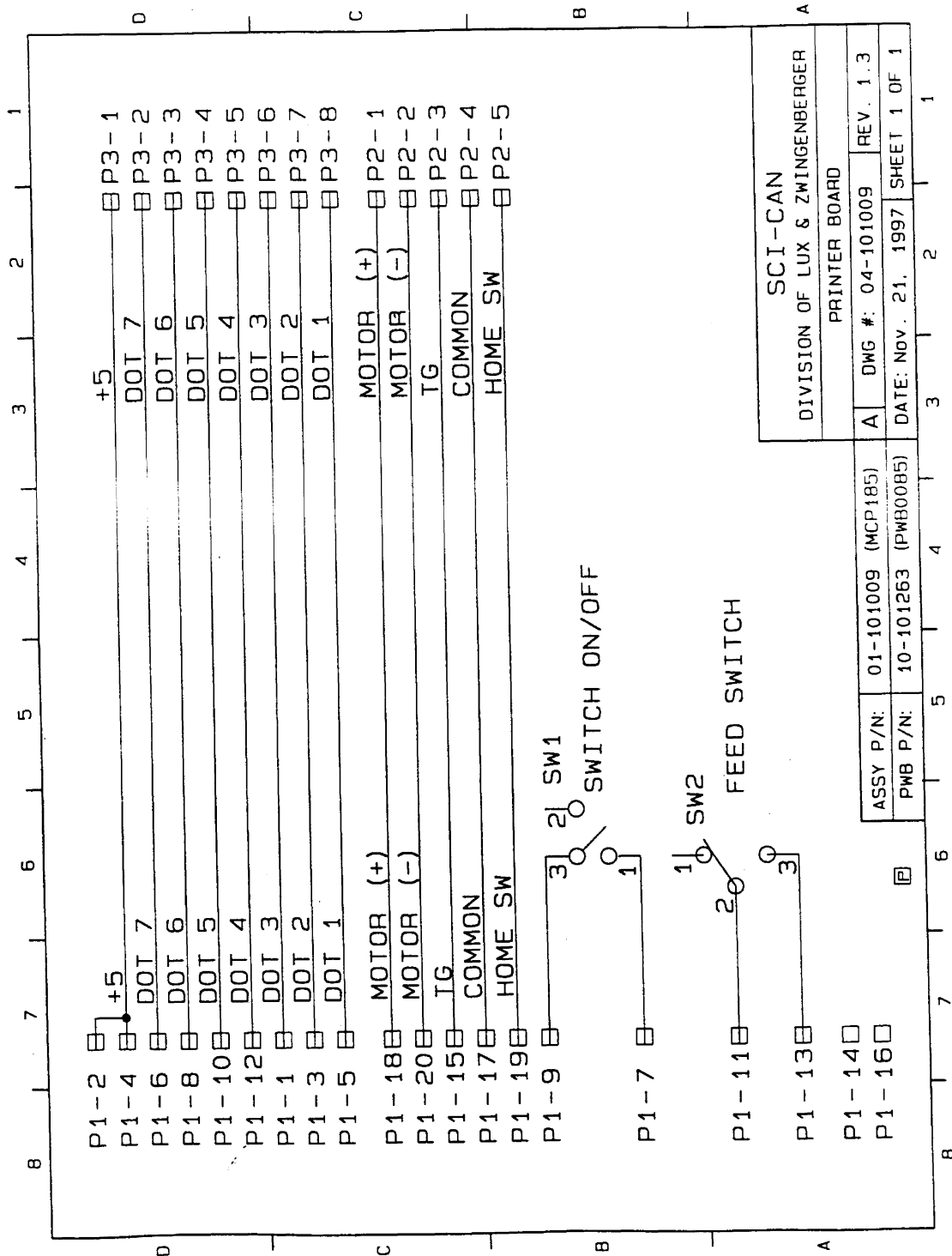
There are several board assembly numbers and revisions that may be encountered while servicing STAT/ML / 5000/ 5000S units. Verify the assembly number on the component side of the board and refer to the appropriate schematic / reference drawing in this manual.

To access the assembly number of the Printer Interface Board, the back and protective shield must be removed from the back of the printer module. See *Printer Removal and Replacement*.

To verify which version of Printer Board is contained within the printer module, the printer assembly must be removed and disassembled. See *Printer Removal and Replacement*.

For further information please contact SciCan.





SCI-CAN			
DIVISION OF LUX & ZWINGENBERGER			
PRINTER BOARD			
ASSY P/N:	01-101009 (MCP185)	DWG #:	04-101009
PWB P/N:	10-101263 (PWB0085)	REV:	1.3
		DATE:	Nov. 21, 1997
		SHEET 1 OF 1	

Document Change Record

Document Number: 96-103933		Title: Printer Interface Board / Printer Board Schematics and Reference Drawings	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	Update with Rev. 3.3 Interface and Rev. 1.3 Printer Board	99-0056

STAT/ML /5000 Spare Parts List

Part Number	Description
01-100204S	Exhaust Tube, A/B/C/D/H
01-100573S	Power Switch, A/B/C/D/H
01-100684S	Bubble Level, A/B/C
01-100713S	Pump Tester Bottle, A/B/C/D/H
01-100724S	Condenser Bottle w/oCondenser,A/B/C
01-100735S	Waste Water Bottle Fitting, A/B/C
01-100747S	Service-Kit ""A,"" A/B/C
01-100780S	Bumper, A/B/C
01-100812S	Condenser Bottle, A/B/C
01-100865S	Probe Bracket Gasket, A/B/C
01-100998S	RepairSolen.Valve(Honeywell)A/B/C/D/H
01-101553S	Leveler, A/B/C/D/H
01-101618S	Probe Bracket, C
01-101619S	Compressor 110V, C
01-101620S	Steam Generator 110V, C
01-101621S	Microswitch, C
01-101622S	Water Reservoir, C
01-101623S	Armature, C
01-101624S	Fascia L W/O Printer, C
01-101625S	Cover w/o Fascia, C
01-101626S	Cover Complete, L, C
01-101627S	Check Valve C
01-101628S	Solenoid Valve 110V, C
01-101647S	Power Cord North America, B/C/D/H
01-101649S	Cassette Seal, C
01-101650S	Fascia Gasket, C
01-101652S	Air Compressor Filter, C
01-101657S	Thermal Paper (Box of 10 rolls)
01-101658S	Cassette Handles, C

Part Number	Description
01-101664S	Calibration Cassette w/Thermometer
01-101708S	Keypad, C
01-101709S	Mesh Rack, C
01-101753S	Statim L Operator's Manual-English
01-101755S	Push-In Fitting, C
01-101756S	Packaging, Statim L, C
01-101757S	Cassette Lid w/Box C
01-101758S	Compressor 100V, C
01-101759S	Steam Generator 100V, C
01-101760S	STATIM L Operator's Manual Japanese
01-101761S	Pump 110V, C
01-101763S	Power Cord Japan, B/C/D
01-101765S	Pump 220/240V, C
01-101766S	Power Cord UK, B/C/D
01-101767S	Power Cord Australia, C/D
01-101768S	Power Cord Switzerland, B/C/D
01-101769S	Power Cord Italy, B/C/D
01-101770S	Steam Generator 220/240V, C
01-101771S	Compressor 220/240V, C
01-101772S	Operator's Manual German, C
01-101773S	Operator's Manual French, C
01-101774S	Operator's Manual Italian, C
01-101775S	Operator's Manual Spanish, C
01-101778S	Fuses 220/240V, C
01-101779S	Power Cord Europe, B/C/D
01-101783S	Reservoir Cap, A/B/C
01-101785S	Solenoid Valve 220/240V, C
01-101787S	Filler Cap (Demo), A/B/C
01-101968S	Printer PCB, C/E/F
01-101970S	Data Cable, C/E/F
01-101971S	Spring/Latch, C/E/F

Part Number	Description
01-101972S	Printer Door, E
01-101973S	Paper Holder, C/E/F
01-101975S	Printer Cover, E
01-101977S	Printer Interface PCB, C/E/F
01-102054S	Rack-Wrapped Instruments, C
01-102119S	Filter Biological, B/C
01-102159S	Printer Door, C
01-103050S	Copper Tubing, C
01-103051S	Silicone Tubing, C
01-103088S	Calibration Cassette, C
01-103090S	Thermometer, A/B/C/D/H
01-103139S	Conductivity Meter, A/B/C/D/H
01-103141S	Control Box, A/B/C/D/H
01-103142S	Patch Cord, A/B/C/D/H
01-103150S	Pump Bracket (SciCan), C/D/H
01-103469S	Allen Key 9/64
01-103470S	Printer Case with Damper
01-103471S	Wrench Solenoid Plunger
01-103472S	Fuses 110V (V 4.2 or later), B/C/D/H
01-103481S	Switches-Printer P.C.B., C/E/F
01-103483S	Pump 100V, C
01-103487S	PCB 100V, C
01-103497S	0.25A Fuse, B/C/D/H
01-103498S	2A Fuse, B/C/D/H
01-103499S	Fuse, 6.3A-250V fast, Europe, C/D
01-103515S	*Micro 100/110V (see 01-103605S)
01-103528S	Fascia Repl. STATIM L w/o LCD
01-103550S	Micro 230V,C (V2.0 or later)
01-103551S	PCB 230V, C
01-103557S	Power Cord Repl. Denmark (det.)
01-103564S	Printer w/PCB, C/E/F

Part Number	Description
01-103568S	*Micro, 230V, (*see 01-103551S), C
01-103571S	Water quality sensor
01-103572S	*PCB Repl.5000 110V (01-103629)
01-103604S	Micro,110V,C (PCB V1.3-)
01-103605S	Micro,110V,C (PCB V2.0+)
01-103629S	PCB 110V,C
01-103686S	Micro 100V, C (PCB V2.0+)
01-103719S	Silicon Tubing (10m),A/B/C/D/H
01-103857S	Isoplate Replacement, C
01-103865S	Seal Lubricant A/B/C
01-103992S	Water Reservoir Drain Tube, C
01-103993S	Power Socket, B/C
01-104120S	Cover Complete-Yoshida, C
01-104159S	Diode Replacement Kit (Set of 5)
01-104169S	Microprocessor 230V France, C
01-104170S	PCB 230V France, C
01-104177S	Pump Recovery Kit-STATIM L 100V, C
01-104178S	Pump Recovery Kit-STATIM L 120V, C
01-104179S	Pump Recovery Kit-STATIM L 230V, C
01-104180S	Leveler Repair Kit, A/B/C
01-104220S	PCB Kit 100V (CR1,2,3) B/C
01-104221S	PCB Kit 100V (CR4) B/C
01-104222S	PCB Kit 100V (CR 8,9,11,12,14) B/C
01-104223S	PCB Kit 100V (U 1,3,2,4) B/C
01-104240S	Fascia only STATIM L, C
01-104284S	Biological Filter Bracket, B/C
01-104288S	Wrench-11/16 x 3/4 Open End,A/B/C/D/H
01-104296S	Seal Replacement Yoshida L/5000
01-104299S	Fascia, 5000, W/O Printer,C
01-104300S	Cover Complete, 5000, C
01-104303S	Valve Coil Repair Kit-120V, A/B/C/D/H

Part Number	Description
01-104304S	Valve Coil Repair Kit, 240V, A/B/C/D
01-104329S	Cylindrical Dust Filter Holder, C
01-104337S	Extended Evaluation Cassette, C
01-104338S	Operator's Manual English Cont., C
01-104343S	Plug - Drain Tubing, C/D/H
01-104382S	LCD Replacement Kit, C
01-104394S	Microprocessor, 230V, C, Australia
01-104395S	PCB 230V, C, Australia
01-104428S	STATIM 5000 Operator's Manual - USA
01-104436S	PCB 110V USA, C
01-104437S	Micro 110V USA (PCB V2.0+), C
01-104446S	Packaging, STATIM 5000, C
01-104460S	Steam Generator Bracket, Modified
01-104462S	Thermal Fuse-Double, C
01-104472S	Extended Cassette Handles, C
01-104486S	IC Extractor/Insertion Kit, A/B/C/D/H
01-104500S	Battery - Printer Interface, C/E/F
01-104501S	Filters - Pump, A/B/C/D/H
01-104585S	Pressure Interface, B/C/D
01-104690S	Pressure Transducer, B/C
01-104693S	Microprocessor 230V 5000S, C
01-104695S	Solenoid Valve 220/240V 5000S, C
01-104696S	Handpiece Adapter, B/C
01-104698S	Adapter Cassette Seal, C
01-104699S	Seal Insert, B/C
01-104700S	Adapter Cassette O-Ring KIT, B/C
01-104704S	Adapter Cassette Lid, C
01-104706S	Pressure Transducer Tube, B/C
01-104709S	STATIM 5000S Fascia w/o Printer, C
01-104710S	STATIM 5000S Cover w/o Printer, C
01-104711S	STATIM 5000S Fascia w/Printer, C

Part Number	Description
01-104712S	STATIM 5000S Cover w/Printer, C
01-104730S	PCB 220/240V 5000S, C
01-104785S	Instrument Holder - 10 mm, C
01-104786S	Instrument Holder - 4 mm, C
01-106070S	Cassette Lid Handle, C
01-106071S	Extended Cassette Lid Handle, C
01-106083S	PCB 220V/240V 5000S France, C
01-106084S	Microprocessor 230V 5000S France, C
01-106087S	Line Filter, B/C/D/H
01-106113S	Solenoid Valve 100V, C
01-106126S	Valve Coil Repair Kit-100V, A/B/C/D
01-106194S	Operator's Manual German 5000S, C
01-106350S	PCB Power Cable, ST5000, 100/110V
01-106351S	PCB Power Cable, ST 5000, 230V
01-106367S	Calibration Cassette, 5000S, C
01-210000	Kit Printer, STATIM L

Document Change Record

Document Number: 96-103931		Title: Spare Parts	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	96.05.29	New.	96-088
2.0	99.04.14	New parts added	99-005

Mains Components



HAZARDOUS VOLTAGES ARE ACCESSIBLE ON THE POWER CORD POWER CORD RECEPTACLE, LINE FILTER, POWER SWITCH AND POWER MAINS PORTION OF THE CONTROLLER BOARD WHEN POWER IS ON. DISCONNECT THE POWER CORD BEFORE SERVICE.



STAT/IM L/5000/ 5000S UNITS CONTAIN ELECTRONIC CIRCUITRY WHICH IS STATIC SENSITIVE. ALWAYS WEAR A STATIC STRAP WHEN WORKING WITH OR NEAR PRINTED WIRING BOARDS. IN ADDITION, USE STATIC FOOTSTRAPS, GROUNDING MATS AND GROUNDED WORK SURFACES WHEN SERVICING MICROPROCESSOR DEVICES, TRAPPORT BOARDS AND DEVICES IN STATIC PROTECTED BAGS.



REPLACE MAINS INPUT COMPONENTS WITH SCICAN APPROVED PARTS ONLY, TO ENSURE ADHERENCE TO APPLICABLE SAFETY AGENCY APPROVALS, STATE, PROVINCIAL, REGIONAL AND NATIONAL LAWS.

Line Cords

STAT/IM L/5000/ 5000S detachable line cords plug into a panel mount A.C. inlet receptacle in the back of the chassis.

Removing a Detachable Line Cord

To remove a detachable line cord (1) connected to the unit through a panel mount A.C. inlet receptacle, follow these steps (see Figure 1):

1. Turn the power switch (2) OFF, and unplug the power cord from the wall outlet.
2. Disconnect the line cord from the panel mount A.C. inlet receptacle.

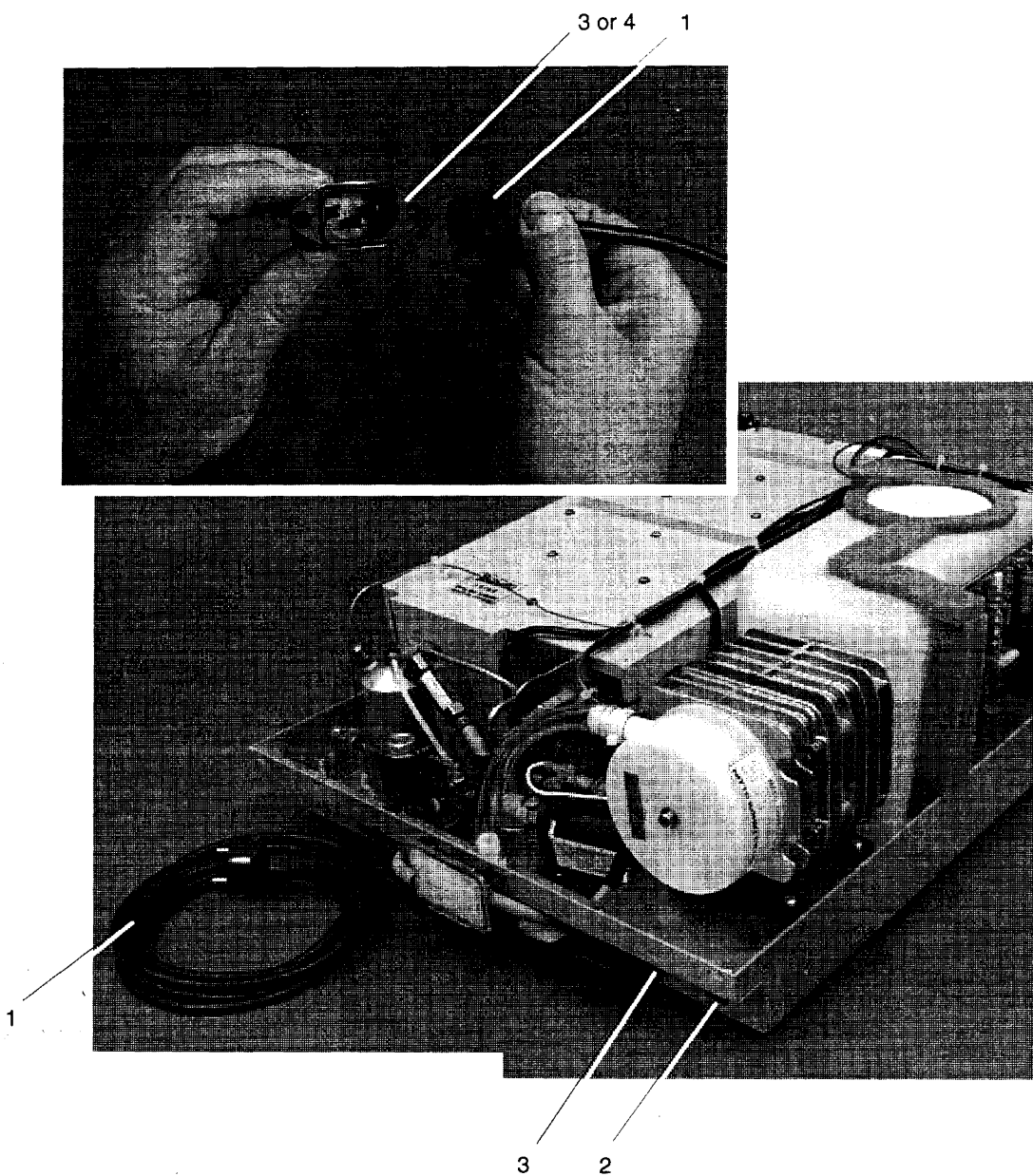
Replacing a Detachable Line Cord



USE REPLACEMENT CORDS WITH APPROPRIATE SAFETY AGENCY RATINGS AND APPROVALS ONLY.

To reinstall a detachable line cord (1), follow these steps (see Figure 1):

1. Select the appropriate replacement line cord from *Spare Parts*.
2. The A.C. inlet receptacle (3) is keyed. Note the shape of the line cord connector and the corresponding shape of the receptacle in the connector.
3. Plug the line cord into the wall receptacle and turn the power switch ON. Observe the LCD and indicator lights to determine that power is present.



1. detachable line cord
2. power switch
3. panel mount A.C.inlet receptacle
4. line filter

Figure 1

Removing and Replacing the A.C. Power Switch



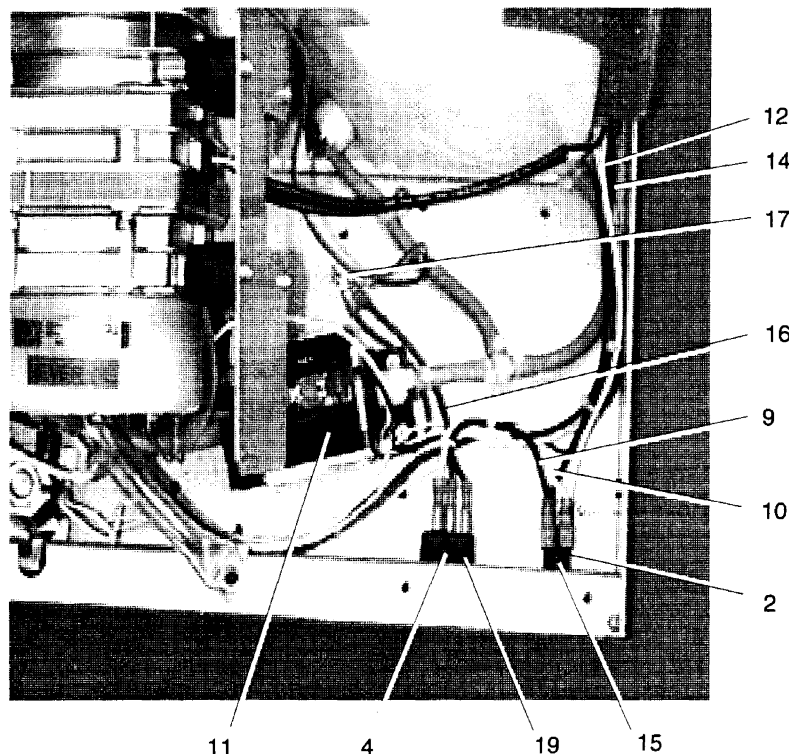
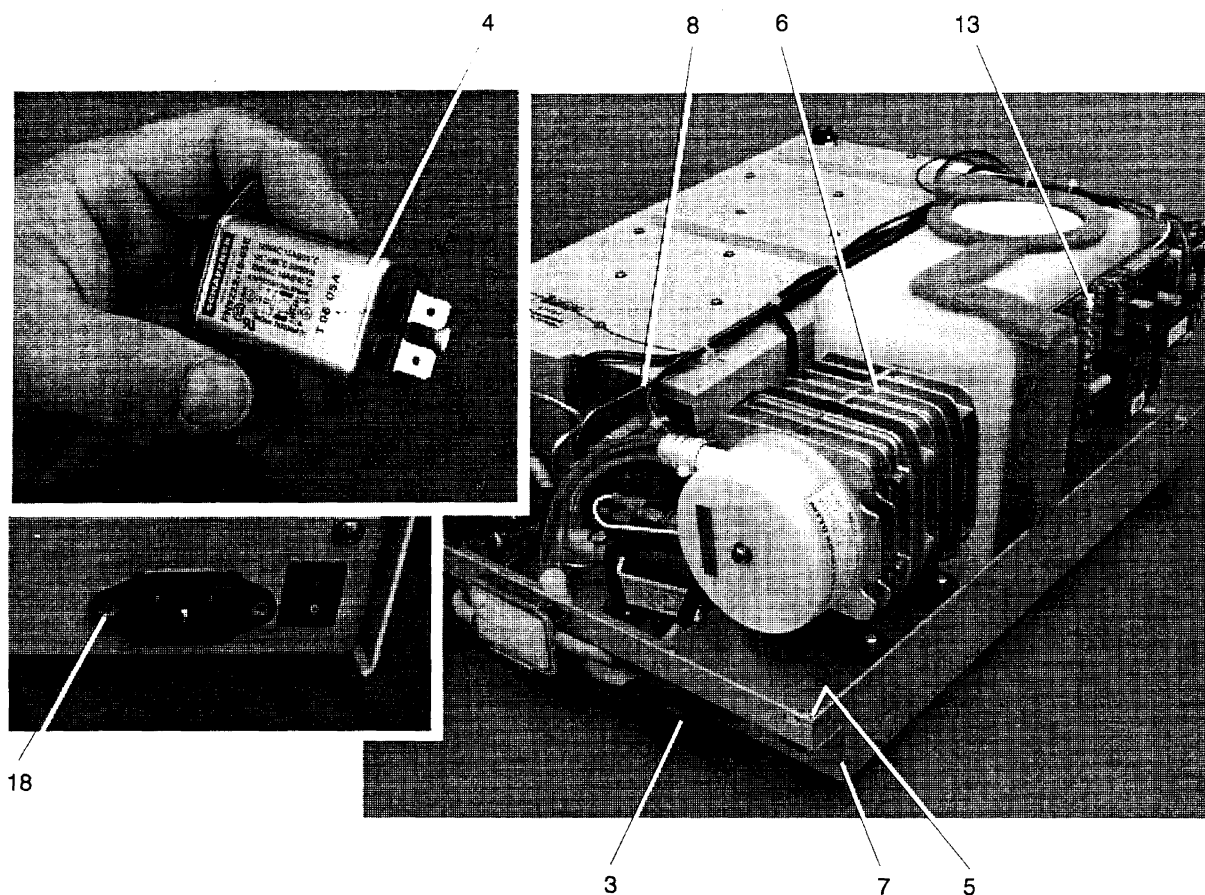
To remove the power switch (2), follow these steps, (See Figure 2):

1. Turn the power switch OFF, unplug the line cord from the wall outlet and remove the detachable line cord (1) from the unit.
2. Remove the four screws (5) holding the compressor bracket (6) to the chassis (7) and rest the compressor to one side. Do not bend the thermocouple leads (8). See, *Compressor*.
3. Disconnect the leads from the A.C. inlet receptacle (3) or line filter (4) to the power switch. Disconnect the white wire (9) from the upper spade terminal, labelled 1, and the black (10) wire from the upper spade terminal, labelled 2, nearest the pump (11).
4. Disconnect the white wire (12) extending from Controller Board (13) terminal J1-1 to the lower power switch spade terminal labelled 1a and the black wire (14) extending from Controller Board terminal J1-2 to the lower power switch spade terminal, labelled 2a, nearest the pump (11).
5. The panel mount style switch is held into the panel with tabs. Compress the tabs (15) and push the disconnected power switch out of the chassis wall.



To replace the power switch (2), follow these steps, (See Figure 2):

1. From a position at the rear of the unit, orient spade terminals 1a and 2a downwards and press the power switch into the clearance hole in the chassis (7). Apply pressure evenly top and bottom until the bezel rests against the chassis wall.
2. Connect the white wire (12) extending from Controller Board (13) terminal J1-1 to the lower right-hand power switch spade terminal labelled 1a and the black (14) wire extending from Controller Board terminal J1-2 to the lower left-hand power switch spade terminal, labelled 2a.
3. Connect the white wire (9) from the line filter (3) or the A.C. inlet receptacle (4) to the upper right-hand power spade terminal labelled 1, and the black wire (10) from either the attached power cord or the A.C. inlet receptacle to the upper left-hand spade terminal labelled 2, nearest the pump (11).
4. Reinstall the compressor assembly (6) using the four screws (5) retained from disassembly. Do not bend the thermocouple leads.
5. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STATIM unit. See, *Required Information, Tools and Routine Maintenance*.



1. detachable line cord(not shown)
2. power switch
3. A.C. inlet receptacle
4. line filter
5. four screws (obscured)
6. compressor assembly
7. chassis
8. thermocouple leads
9. white wire
10. black wire
11. pump
12. white wire (J1-1)
13. Controller Board
14. black wire (J1-2)
15. power switch tabs
16. green wire
17. ground post
18. two screws
19. A.C. inlet receptacle tabs

5. Plug the line cord into the wall receptacle and turn the power switch ON. Observe the LCD and indicator lights to determine that power is present.



Removing and Replacing the Line Filter

Some STATIM L/5000/ 5000S units contain a line filter which acts as a line filter and a receptacle for the line cord. It is difficult to determine whether the line filter has failed or not. If the unit blows mains fuses in the service panel there may be a short in the line filter. Disconnect all leads from the main input and output and test for shorted circuits.

To remove a line filter (4), follow these steps, (See Figure 4):

1. Turn the power switch (2) OFF, unplug the line cord from the wall outlet and remove the detachable line cord from the unit. See, *Removing Detachable Line Cord*.
2. Remove the four screws (5) holding the compressor assembly (6) to the chassis (7) and rest the compressor to one side. Do not bend the thermocouple leads (8). See, *Compressor*.
3. Disconnect the white wire (9) from line filter position N, the black wire (10) from line filter position P and the green wire (16) from line filter position $\frac{1}{2}$. If the pump (11) or pump tubing interferes with the line filter terminals, move the pump or move/disconnect the appropriate tube. See, *STATIM L/5000/ 5000S Pumps*.
4. Remove two screws (17) holding the line filter to the chassis (7) and remove the line filter.



To replace a line filter (4), follow these steps, (See Figure 4):

1. Insert the line filter in the opening in the chassis. The P and N fast-spade terminals are up, the ground terminal is facing down.
2. Insert and tighten the two screws (18) holding the line filter.
3. Connect the white wire (9) from the power switch to line filter position I and the black wire (10) from the power switch to line filter position F.
4. Connect the green wire (16) from the ground post (17) to line filter position $\frac{1}{2}$.
5. If the pump (11) or pump tubing was moved/disconnected, reinstall, reconnect the pump/tube. See, *STATIM L/5000 Pumps*.
6. Reinstall the compressor assembly (6) using the four screws (5) retained from disassembly. Do not bend the thermocouple leads. See, *Compressor*.

6. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STATIM unit. See, *Required Information, Tools and Routine Maintenance*.
7. Plug the line cord into the wall receptacle and turn the power switch ON. Observe the LCD and indicator lights to determine that power is present.

Removing and Replacing the A.C. Inlet Receptacle

Some STATIM L/5000/ 5000S units contain an A.C. inlet receptacle for the line cord.

To remove an A.C. inlet receptacle (3), follow these steps, (See Figure 4):

1. Turn the power switch (2) OFF, unplug the line cord from the wall outlet and remove the detachable line cord (1) from the unit. See, *Removing a Detachable Line Cord*.
2. Remove the four screws (5) holding the compressor bracket (6) to the chassis (7) and rest the compressor to one side. Do not bend the thermocouple leads (8). See, *Compressor*.
3. Disconnect the white wire (9) from receptacle position N, the black wire (10) from receptacle position L and the green wire (16) from receptacle position $\frac{1}{\text{E}}$.
4. The A.C. inlet receptacle is a panel mount style component held into the panel with tabs. Compress the tabs (19) and push the disconnected receptacle out of the chassis wall.

To replace an A.C. inlet receptacle (3), follow these steps, (See Figure 4):

1. Insert and snap the receptacle into the opening in the chassis. The N and L faston spade terminals are up, the ground terminal is facing down.
2. Connect the white wire from the power switch to receptacle position N and the black wire from the power switch to receptacle position L.
3. Connect the green wire from the ground post to line filter position $\frac{1}{\text{E}}$.
4. Reinstall the compressor assembly (6) using the four screws (5) retained from disassembly. Do not bend the thermocouple leads (7). See, *Compressor*.
6. A dielectric strength test (Hi-Pot) and a protective bonding impedance test (ground continuity) must be performed on the STATIM unit. See, *Required Information, Tools and Routine Maintenance*.
7. Plug the line cord into the wall receptacle and turn the power switch ON. Observe the LCD and indicator lights to determine that power is present.

Document Change Record

Document Number: 96-104748		Title: Mains Components	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	99-01-23	New.	99-0059

Pressure Transducer

STATIM 5000S units utilize a pressure transducer to measure the steam pressure upstream of the solenoid valve inlet fitting. The transducer is attached to a bracket located behind the compressor. Transducer wires routed along the top of the armature to the Pressure Interface Board, which is attached to the P2 printer connector of the Controller Board.

Checking the Pressure Transducer

To check the pressure transducer, follow these steps:

1. Start any sterilization cycle. Allow the cycle to enter the sterilization phase of the cycle and record the temperature and pressure readings shown on the LCD.
2. Refer to Table A. Match recorded temperatures with the chart temperatures and compare pressure readings. If recorded pressure readings are within ± 4 kPa of the chart pressure readings, the transducer is operational. If not, it must be replaced.

Removing the Pressure Transducer



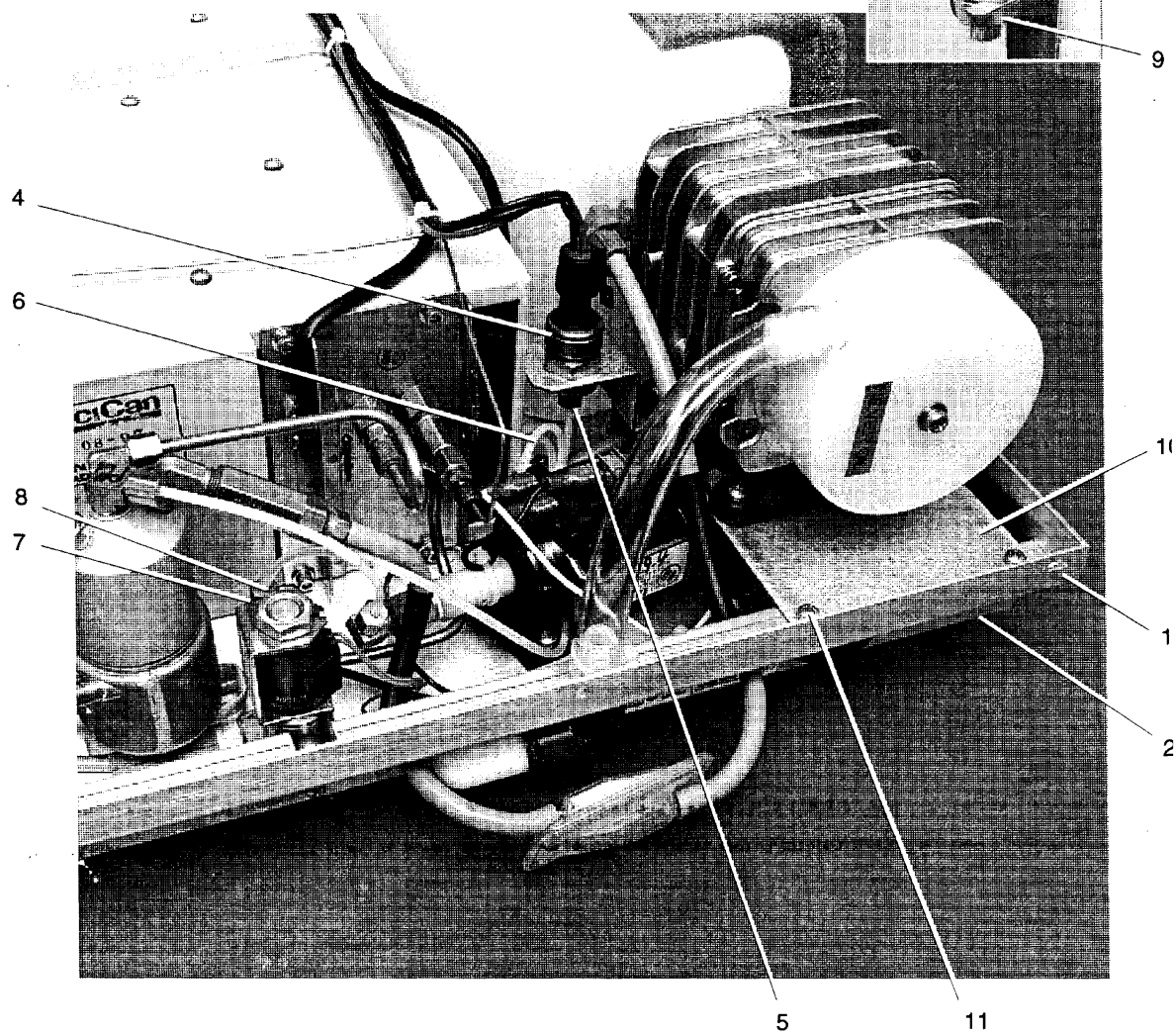
CAUTION: THE PRESSURE TRANSDUCER, STEAM GENERATOR, AND OTHER COMPONENTS MAY BE HOT IF THE UNIT HAS BEEN OPERATING. GUARD AGAINST BURNS.

To remove the pressure transducer (1), follow these steps (see Figure 1):

1. Turn the power switch (2) OFF, and unplug the line cord (3) (not shown). Allow time for the unit to cool.
2. Disconnect the transducer connector (4) from the top of the transducer.
3. Disconnect the compression nut (5) holding the coiled transducer tube (6) to the solenoid valve inlet "T" fitting (7) if you intend to remove/replace the tube.
3. Using a 3/8 inch wrench, disconnect the compression nut (8) holding the coiled transducer tube, from the bottom of the transducer.
4. Using a 7/8 inch wrench or an adjustable wrench, remove the transducer nut and washer (9) securing the transducer to the compressor bracket (10).
5. If the compressor bracket needs to be removed, remove the four screws and washers (11) holding the bracket to the chassis (12). See, *Compressor*.
6. If the transducer is damaged, discard the transducer.

1. pressure transducer
2. power switch (view obscured)
3. line cord (not shown)
4. transducer connector
5. compression nut
6. coiled transducer tube
7. solenoid valve inlet "T" fitting
8. compression nut
9. nut and washer
10. compressor bracket
11. screw and washers
12. chassis

Figure 1



Replacing the Pressure Transducer

To replace the pressure transducer (1), follow these steps (see Figure 1):

1. Make sure the power switch (2)(view obscured) is OFF, and the unit unplugged.
2. If the compressor bracket (10) was removed, reinstall the bracket or the chassis (12) using the four retained screws and washers (11).
2. Install the transducer in the compressor bracket using the nut and washer (9) retained from disassembly. Tighten with a 7/8 inch wrench or an adjustable wrench.
3. Reconnect the one end of the coiled transducer tube (6) to the bottom of the transducer. Thread the compression nut (8) finger tight, then tighten the compression nut using a 3/8 inch wrench. **DO NOT OVERTIGHTEN.**
4. If the tube was removed/replaced, reconnect the other end of the coiled transducer tube to the solenoid valve inlet "T" fitting (7). Thread the compression nut (5) finger tight, then tighten the compression nut using a 3/8 inch wrench. **DO NOT OVERTIGHTEN.**
5. Plug the transducer connector (4) onto the transducer. Make sure tab on the connector snaps in place.
6. Check that all fittings have been tightened and that all brackets are secured to the chassis. Reconnect the line cord (3)(not shown) and the power switch (2)(view obscured) ON.
7. Run any sterilization cycle and observe all fittings and tubes for leaks. Check LCD read-out for messages indicating cycle status.

Chart A

	Temperature Displayed (C°)	Pressure Displayed (kPa)
Rubber and Plastics Cycle	121	205
	122	211
	123	218
	124	225
	125	232
Wrapped, Unwrapped Heavy Duty Unwrapped Cycles	134	304
	135	313
	136	322
	137	332
	138	341

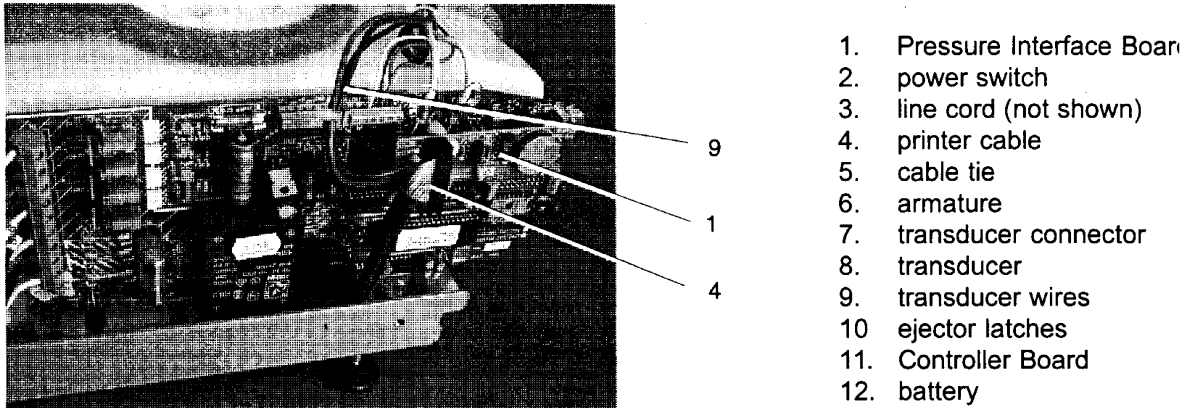
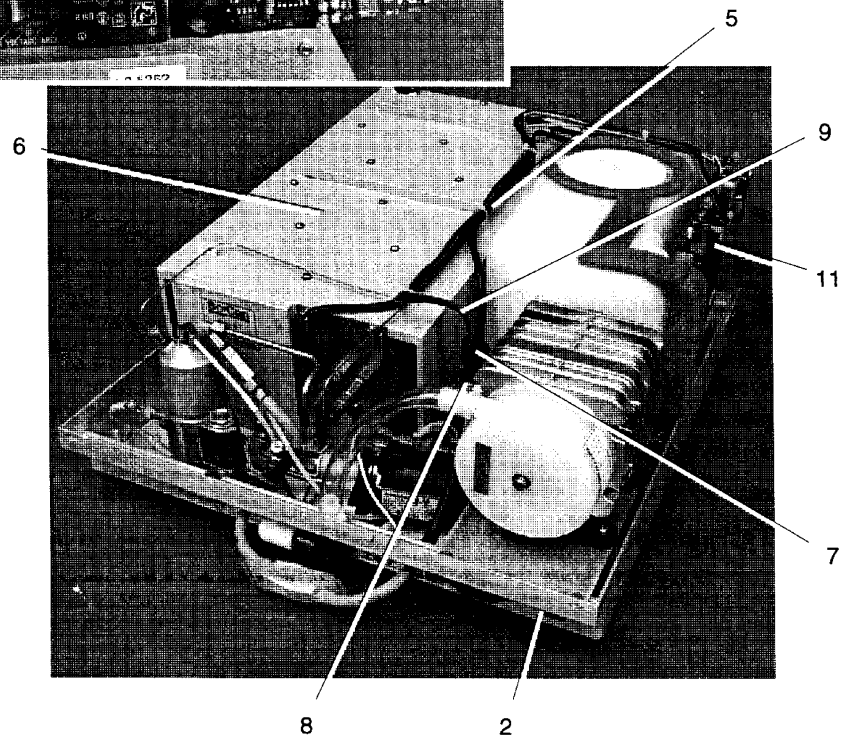
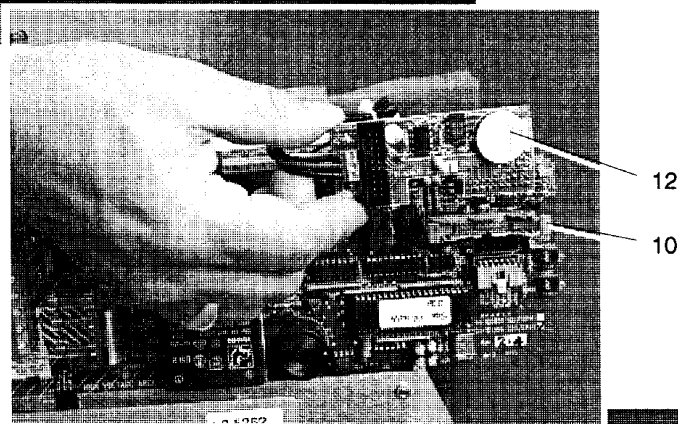


Figure 2



Removing the Pressure Interface Board



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HAZARDOUS VOLTAGES ARE ACCESSIBLE ON THE CONTROLLER BOARD WHEN THE POWER IS ON.

STATIM 2000 UNITS CONTAIN ELECTRONIC CIRCUITRY WHICH IS STATIC SENSITIVE. ALWAYS WEAR A STATIC STRAP WHEN WORKING WITH NEAR PRINTED WIRING BOARDS. IN ADDITION, USE STATIC FOOTSTRAPS, GROUNDING MATS AND GROUNDED WORK SURFACE WHEN SERVICING MICROPROCESSOR DEVICES. TRANSPORT BOARD AND DEVICES IN STATIC PROTECTED BAGS.

The Pressure Interface Board is a piggyback board assembly which is attached to the P2 printer connector of the Controller Board using the latch mechanism of the P2 header.

To remove the Pressure Interface Board (1) follow these steps (see Figure

1. Turn the power switch (2) OFF, and unplug the line cord (3) (not shown)
2. Disconnect the printer cable (4) (if present) from Pressure Interface Board connector P2.
3. Cut any cable ties (5) securing the transducer wires to the armature (6) other wires.
4. Disconnect the transducer connector (7) from the transducer (8).
5. Disconnect the transducer wires (9) from Pressure Interface Board terminal positions P1-1 'SIG' (blue wire, *signal*), P1-2 'V+' (red wire *V+*) and P1-3 'GND' (black wire, *ground*).
4. Press the ejector latches (10) of Controller Board (11) connector P2 to unseat the Pressure Interface Board and remove the board.

Replacing the Pressure Interface Board

To replace the Pressure Interface Board (1) follow these steps (see Figure

1. Orient the Pressure Interface Board with the circuit side of the board facing away from the Controller Board (11) and the P2 connector on the left-hand side. Gently seat the Pressure Interface Board onto the Controller Board P2 connector until the ejector latches are in an upright position.
DO NOT CRUSH OR PINCH THE THERMOCOUPLE LEADS.
SUPPORT THE CONTROLLER BOARD TO AVOID EXCESS FLEX OF THE BOARD.
2. Connect the transducer wires (9) to Pressure Interface Board terminal positions P1-1 'SIG' (blue wire, *signal*), P1-2 'V+' (red wire *V+*) and P1-3 'GND' (black wire, *ground*).

!

3 'GND' (black wire, *ground*).

3. Plug the transducer connector (7) on the transducer (8). Make sure the tab on the connector snaps in place.
4. Secure the transducer wires to the armature using cable ties (5).
5. Connect the printer cable (4) (if present) to Pressure Interface Board connector P2. Ensure that Pin 1 of the keyboard cable aligns with Pin 1 of Pressure Interface Board P2.
6. Plug in the line cord (3) and turn the power switch (2) ON.
7. Run any cycle and observe LCD read-out for messages indicating cycle status.
8. Calibrate the thermocouples. See, *Thermocouple Calibration*.

Removing and Replacing the Battery

OBSERVE APPROPRIATE ESD SAFEGUARDS WHEN SERVICING.

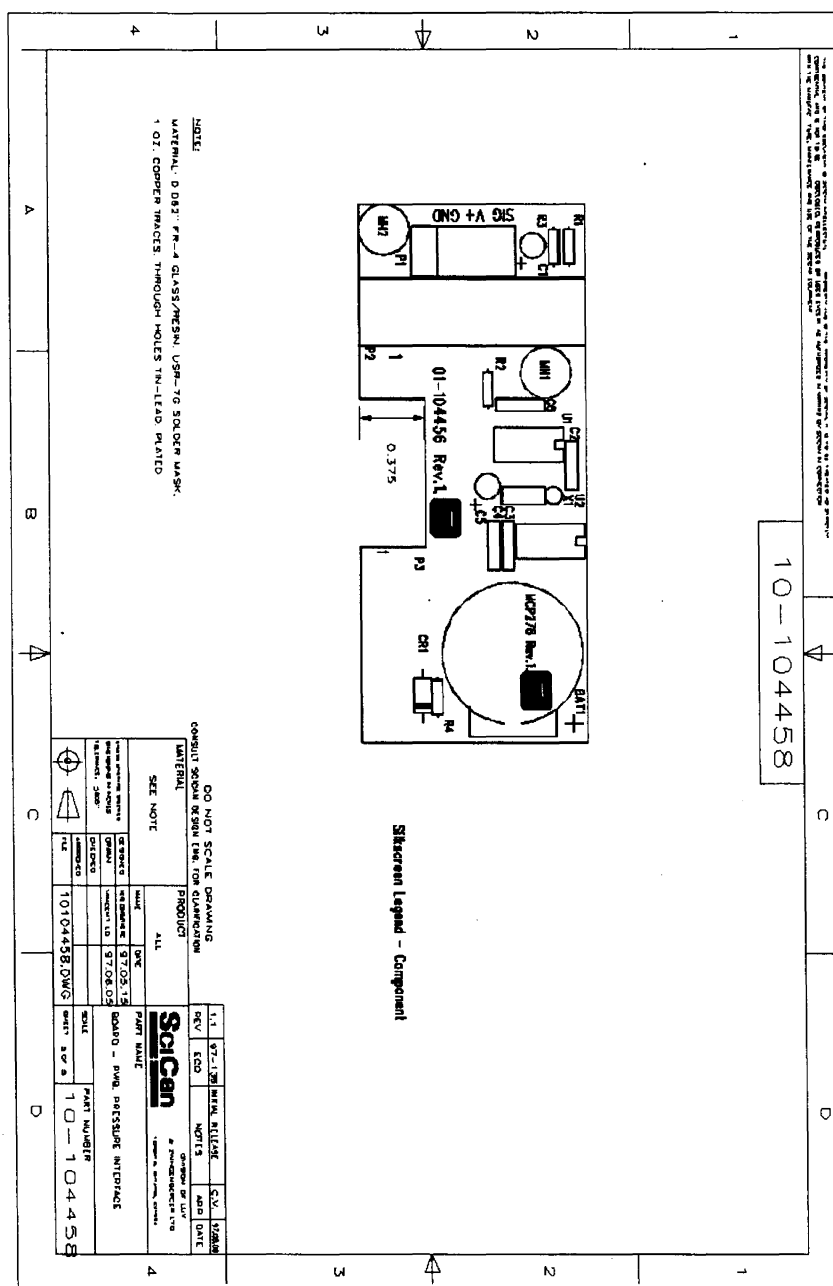
When installed and a printer attached, the real time clock and battery on the Pressure Interface Board replace the clock and battery found in the printer module.

The battery requires replacement when the date/time function is not preserved when power is removed.

To remove the battery (12), follow these steps (See Figure 2):

1. Remove the Pressure Interface Board as described in *Removing the Pressure Interface Board*.
2. Carefully desolder BAT1 from the component side of the board. Note the orientation of the anode and cathode. ALWAYS REPLACE THE BATTERY WITH A SCI CAN BATTERY OF EQUAL RATING AND SIZE Solder the replacement battery in position BAT1. See, *Pressure Interface Board Schematic*.
3. Discard the old battery. Observe all applicable environmental laws.
4. Replace the Pressure Interface Board as described in *Replacing the Pressure Interface Board*.

10 9 8 7 6 5 4 3 2 1



CONFIDENTIAL

Document Change Record

Document Number: 96-104749		Title: Pressure Transducer	
REV.	DATE	DESCRIPTION OF CHANGES	ECO
1.0	99.04.14	New.	99-0059